

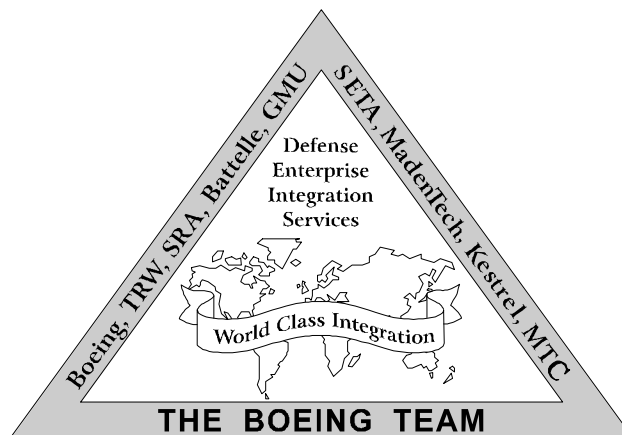
**Defense Enterprise Integration Services
Joint Requirement Analysis and Integration Directorate**

**Contract Number: DCA100-94-D-0016
Delivery Order Number: 48**

JOPES Database Migration to GCCS

**GCCS/JOPES Database Migration
Software Test Plan
(Revision)**

048D065



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**TECHNICAL SUPPORT FOR THE
CENTER FOR ENTERPRISE INTEGRATION**

**DELIVERY ORDER FOR
GCCS DATABASE MIGRATION**

**GCCS/JOPE DATABASE MIGRATION
SOFTWARE TEST PLAN
(REVISION)
30 AUGUST 1996**

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SECTION 1 - SCOPE

1.1 IDENTIFICATION

This Global Command and Control System (GCCS) Joint Operation Planning and Execution System (JOPES) Database Migration Software Test Plan (STP) describes the test environment; test identification, to include general test requirements and schedules; and data recording, reduction, and analysis necessary to test the JOPES Database Migration to the GCCS, in accordance with Defense Information Systems Agency (DISA) Contract DCA100-94-D-0016. The referenced contract requires the rehosting of the JOPES Core Database from the Worldwide Military Command and Control System (WWMCCS) Distributed Processing Systems (DPS) 8(000) mainframe to a Client/Server (C/S) architecture. This document complies with Data Item Description DI-MCCR-80014A, modified to support the project.

The scope of this STP is limited to System Test (ST) of GCCS JOPES Database Migration software for GCCS Version 2.X and preliminary development testing of GCCS Version 3.0. The 2.X software is the GCCS Delivery 2 Version with improvements incorporated and tested for delivery to the Government for final Acceptance Test immediately following this test.

The JOPES Database Migration to GCCS is comprised of Computer Software Segments, the major segments include: Scheduling and Movement (S&M), S&M Database (SMDB), Ad Hoc Query (AHQ), System Services (SS), Information Management Subsystem/Reference File Manager (IMS/RFM), Non-Unit Personnel Generator (NPG), and Medical Planning and Execution System (MEPES). In addition, the S&M, AHQ, and SS Graphical User Interface (GUI) segments above have Character User Interface (CUI) segments. Tests included in this STP will focus on the system level. Test cases are developed as working papers for the use of the test team and will be turned in to Configuration Management (CM) with the rest of the test documentation at the end of testing. This STP will exercise pre-existing JOPES and Technology Insertion Project (TIP) capabilities to ensure functionality is successfully migrated, verify that consistency is maintained between the C/SS, and verify the movement of the database from the mainframe to the C/S did not introduce any new errors.

1.2 SYSTEM OVERVIEW

The GCCS is the realization of the concept set forth by the Command, Control, Communications, Computers, and Intelligence (C4I) for the Warrior. It is the single, global C4I system to support the war fighter, whether from a foxhole or from a Commander-in-Chief's (CINC) command post. It guides all Services to a global C4I system that satisfies the total information requirements of the war fighters when they fight as a team with a common mission. The GCCS provides a single view of the military C4I. This view is a widely distributed, user-driven network to which the war fighter "plugs in." The network provides seamless, secure connectivity through multiple, highly flexible nodes to all other operational elements and databases (which are automatically updated and from which desired information can be pulled) for any assigned mission. Figure 1-1 depicts the system overview of a portion of the GCCS network.

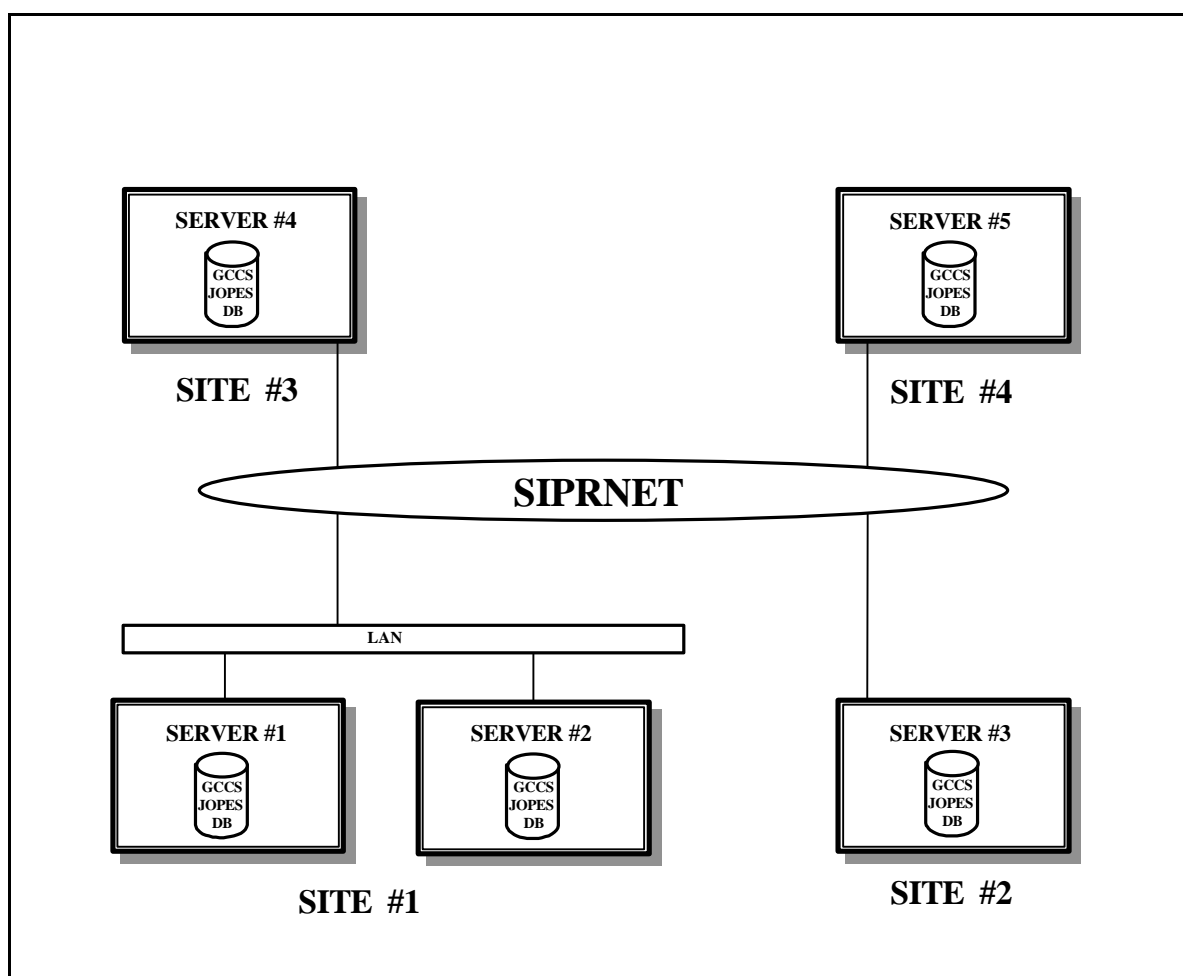


Figure 1-1: System Overview.

The GCCS is a user-focused evolutionary program being developed with oversight from the Office of the Secretary of Defense (OSD) and the Joint Staff. Starting from a baseline integration of systems, the GCCS will evolve to replace existing Command, Control, Communications, and Intelligence (C3I) systems and applications. The GCCS has two components; the core functionality and the GCCS application environment and various C4I functional support applications. The core functionality is designed, developed, and maintained by DISA. From a functional perspective, the core is composed of C3I utilities, environmental configuration programs, and specific, common C3I functional applications. This software environment is based on open standards and a common Application Program Interface (API) specification.

DISA will certify all applications with the GCCS logo as being GCCS compatible. The role of certification, verification, and testing will be the responsibility of the Joint Interoperability Engineering Office (JIEO) Center for Test and Evaluation. In this way, the functionality of the GCCS can mature, grow, and be configurable to user requirements. All existing and potential contractors will be provided the common APIs, GUI style guides, and other development guidelines in order to develop or modernize, C3I support applications. The number one priority is to give the end users the opportunity to define and design both the common environment and the application specific user

interface. The GCCS must, and will, be defined and designed from the user's perspective, characterized by short design and development cycles, incremental installation of functionality, operational prototyping, on-site, developer liaisons, and rapid response to user Change Requests (CRs)/Problem Reports (PRs). The GCCS must make use of standard data through the adoption of existing standard data, as it is available, and through the establishment of standard data following DoD 8320.1 series guidance.

The GCCS Database Migration task will develop new software for the GCCS in accordance with a three tiered software architecture; an interface tier, a data tier, and an inner tier. Each of these tiers must allow for physical location independence. The interface tier will consist of client processes that interface GCCS functionality. The inner tier implements the GCCS functionality and contains access to the data tier. The data tier consists of all the data within the scope of the GCCS data architecture. The contractor will use data standards as defined within the GCCS environment for all data within the domain of the GCCS data architecture.

The JOPES Database migration initiated by the S&M work is working toward a single global command and control system which will integrate operational, intelligence, and combat service support information. Successfully migrating the JOPES Core Database to the GCCS environment will involve several inter-related activities which are described below.

Prior to the GCCS initiative, TIP provided the operating environment and communications architecture for the emerging JOPES open-systems infrastructure. TIP provided the open systems foundation for applications to migrate from the WWMCCS Honeywell mainframe environment. This environment, now referred to as the GCCS environment, hosts the following functional applications: the Dynamic Analysis and Replanning Tool (DART), the Joint Flow Analysis System for Transportation (JFAST), the Logistics Sustainment Analysis and Feasibility Estimator (LOGSAFE), and the Force Augmentation Planning and Execution System (FAPES). Each of these applications has its own database and all of them exchange data, either unidirectional or bidirectionally, with JOPES. To handle this information exchange, the IMS and the RFM were created to extract information from the JOPES Integrated Data Store I (IDS/I) Database on the WWMCCS mainframe and make that data available to the GCCS applications. Other functionality has been targeted for the GCCS environment, including MEPES, that has JOPES data requirements.

During the S&M project, the JOPES S&M, as well as the JOPES "Core" data, were analyzed and modeled within the GCCS environment. The "Core" data, including reference file data, represented data that was part of JOPES but not accessed by the S&M applications. All of the JOPES data requirements were included in the physical database model developed during the S&M task.

With the exception of S&M, each of the above applications have their own separate database. Further, each of the databases have their own model and physical implementation of what is being referred to as JOPES Core data. This means there is a large amount of redundancy and lack of standardization across these databases. The GCCS Database Migration task will begin the process to provide the environment whereby redundant information is incorporated into the core and controlled within the GCCS environment.

Each of the targeted GCCS application databases must be analyzed for data to be included in the JOPES Core. For data to qualify as a candidate for the Core, it must meet at least one of the following criteria:

- The data must be shared with another GCCS application, or
- The data must be shared with other users of the same application across the GCCS environment.

The application databases will be evaluated with these rules in mind and include in the Core only that data which meets the above criteria. The process of modeling and standardizing data will be challenging, especially given the aggressive nature of the schedule. As such, application unique data will not be incorporated into the JOPES Core. This has a further advantage in that the amount of coordination among contracting entities is reduced when changes are made to application unique data. Figure 1-2 depicts a single server and indicates the area impacted and where testing is required for functional verification.

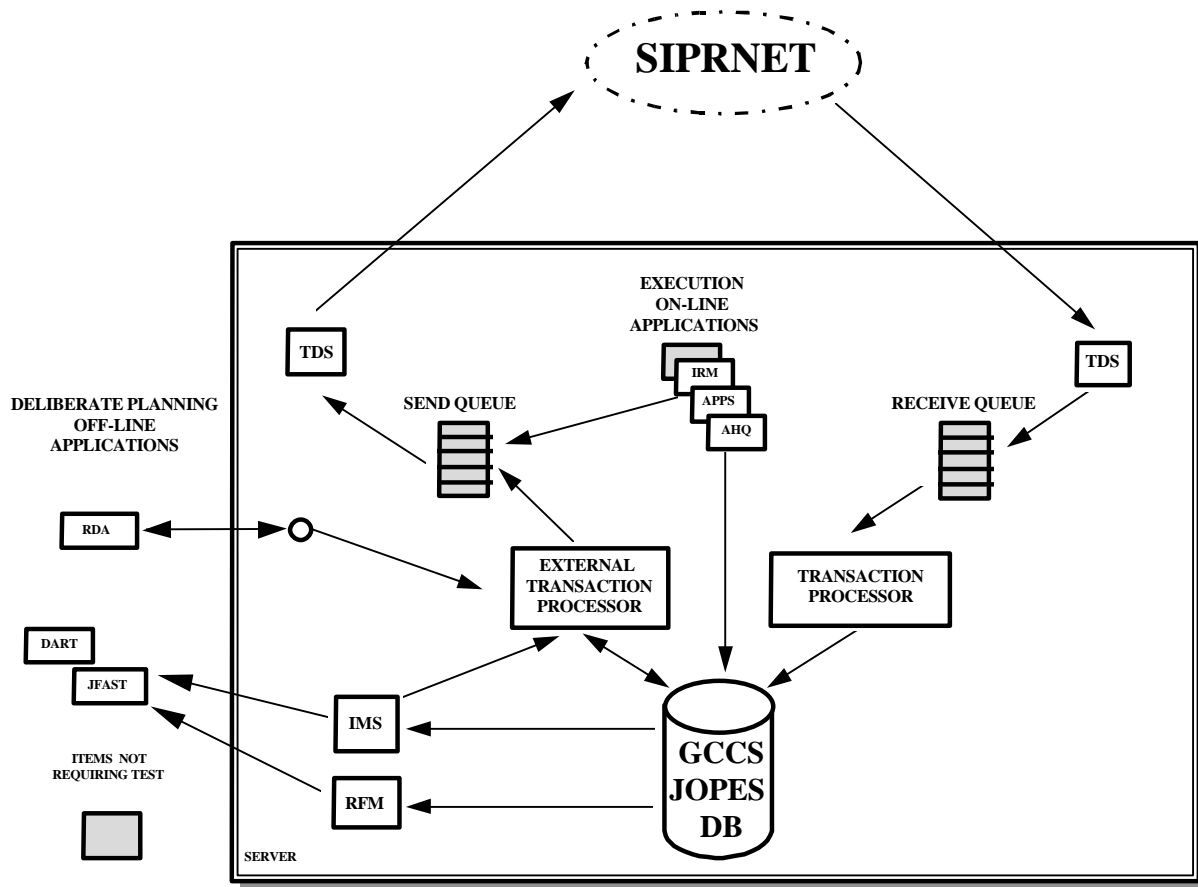


Figure 1-2: System Details.

1.3 DOCUMENT OVERVIEW

This document is organized in 6 sections and eleven appendices:

- **Section 1** describes the scope of the GCCS JOPES Database Migration. It provides the title and abbreviation of the system and describes the three Computer Software Configuration Items (CSCI) to which this STP applies.

- **Section 2** provides a list of documents used in the development of this STP.
- **Section 3** provides information pertaining to the hardware and software environment and the activities necessary to install, test, and control the test environment.
- **Section 4** provides the formal qualification test descriptions. This section contains the general test requirements, test classes and test level. Each test is identified by name and includes a brief statement of the test objectives, prerequisites, types of data to be recorded, any assumptions and constraints, a test summary, and a test schedule.
- **Section 5** identifies how the test results will be recorded, how the metrics will be collected, and the data reduction and analysis process.
- **Section 6** contains an alphabetical listing of all acronyms and abbreviations and their meanings as used in this document.
- **Appendix A** provides a sample CR/PR form and instructions for completing CRs and PRs.
- **Appendices B through J** provide test case information that includes test steps/inputs and expected results. Test cases are considered working papers and will be revised with the next update, and at the beginning and conclusion of the ST.
- **Appendix K** provides the GCCS Requirements Traceability System (RTS) requirements to test cases traceability. This test case traceability appendix is considered a working paper and will be revised with the next update, and at the beginning and conclusion of the ST.

1.4 RELATIONSHIP TO OTHER PLANS

The entire GCCS JOPES Database Migration test program is dependent upon a stable, controlled test bed and the reliable configuration management of all application and utility software undergoing test. Configuration control of the ST environment is conducted according to the practices and procedures specified in Section 7 of the *Software Development Plan (SDP) for the JOPES Database Migration to GCCS*.

SECTION 2 - REFERENCED DOCUMENTS

The following documents, in addition to the documents identified in the Software Development Plan, were used during development of this STP. In the event of conflict between the documents referenced herein and the contents of this document, the contents of this document will supersede the referenced document.

- a. *Software Development Plan for the JOPES Database Migration to GCCS*; System Research And Applications (SRA) Corporation, 9 February 1996.
- b. *Software Test Plan/Software Test Description: Scheduling and Movement Client/Server System Services CSCI Formal Qualification Testing STP/STD*; CDRL H00A.02; SRA Corporation, 14 August 1994.
- c. *Revised Integration Software Test Description for the Technology Insertion Project (TIP) Integration Formal Qualification Testing STD*; CDRL L003/R; SRA Corporation, 9 February 1994.
- d. *Revised Software Test Plan: Technology Insertion Project (TIP), Integrated Test Plan*, CDRL L002/R; SRA Corporation, 9 November 1993.
- e. *Software Test Description: Dynamic Analysis and Replanning Tool (DART) Technology Insertion Project (TIP) Modifications Formal Qualification Testing STD*; CDRL H004; SRA Corporation, 18 June 1993.
- f. *Integration Software Test Description for the Technology Insertion Project (TIP) Operational Prototype*; CDRL L003; SRA Corporation, 17 June 1993.
- g. *Software Test Plan: Technology Insertion Project (TIP), Integrated Test Plan*, CDRL L002; SRA Corporation, 30 April 1993.
- h. *Software Test Plan/Software Test Description: Scheduling and Movement Client/Server Applications CSCI Formal Qualification Testing STP/STD*; CDRL H00A.01; SRA Corporation, 15 August 1994.
- i. *Software Test Description for the Medical Planning and Execution System (MEPES)*; CDRL K008; SRA Corporation, 7 August 1992.
- j. *S&M Software Test Plan/Software Test Description for Client/Server Integration*; CDRL L002; SRA Corporation, 15 August 1994.
- k. *JOPES Database Migration to GCCS - Phase IV, Statement of Work*, Contract number DCA100-94-D-0016, Revised 13 June 1996.

SECTION 3 - SOFTWARE TEST ENVIRONMENT

The hardware and software will be configured in the Operational Test Environment (OTE) portion of the System Engineering Environment (SEE). The SEE was designed by the Systems Engineering Group to meet the GCCS JOPEs Database Migration requirements. This test connectivity allows intranode and internode transaction distribution testing of the system in a controlled test environment. The hardware, software, and connectivity configurations are described below.

3.1 SOFTWARE ITEMS

This section defines the software items required for GCCS JOPEs Database Migration ST. The minimum suite of software required to test the GCCS JOPEs Database Migration consists of software for three Sun Servers, a suite of Personal Computers (PCs), and workstations. The GCCS JOPEs Database Migration software and database reside on the Sun Server and are accessed from PC workstations. The JOPEs software (modified for S&M) and database currently reside on the WWMCCS Host and will be migrated to the server. They are accessed from Visual Information Projection (VIP) terminals or workstations emulating X-terminals. The software and test data for GCCS JOPEs Database Migration are unclassified. Naturally, after the Database migration, the WWMCCS requirements are no longer valid. The software details are as follows:

- **Sun SPARCservers (3)**
 - Solaris, Version 2.3
 - Sun Operating System 5.3
 - OpenWindows 3.2/3.3
 - X11R5
 - NeWSprint 2.5
 - Oracle, Version 7.1.3
 - SQL*NET, Version 2.1.4
 - SQL*PLUS, Version 3.1.1.9.2
 - PL*SQL, Version 2.0
 - SQL*Loader, Version 1.1.9.0.1
 - SQL*Forms, Version 3.0.16.12
 - Oracle Access Server, Version 1.1.26
 - Oracle Database Interface Library
 - S&M Applications Software
 - S&M System Services Software
 - GCCS IMS/RFM Software
 - MEPES
 - NPG
 - AHQ
 - Applix.

- **Workstations**
 - **WWMCCS Information System (WIS) Workstations (WWS) (3)**
 - A/UXTM Operating System, Version 4A
 - MacX, Version 3.0 (X11R5)
 - Graphics Kernel System (GKS), Version 3.30.7
 - WingZTM Spreadsheet/Graphics, Version 1.1ae
 - WordPerfectTM Word Processor, Version 2.1.3
 - Enhanced Terminal Capability (ETC) X1.0.0
 - Kermit, Version 1.19
 - VIP 7705W Emulation (Minitec), Version 2.74
 - TCP/IP (ORASRV), Version 1.2.7.1.4
 - SecureWare.
 - **Intel Based 486 Workstation (3)**
 - Microsoft DOS, Version 5.0
 - PC-NFS 5.0 Network File Server Utilities
 - PC-XWare 1.0
 - Microsoft Windows 3.1
 - Applicable application software.

3.2 HARDWARE AND FIRMWARE ITEMS

Figure 3-1 represents the hardware test configuration that will be used for the GCCS JOPES Database Migration ST. The normal suite of equipment required for testing consists of three Sun SPARCservers, three WIS Workstations, two Intel based 486 workstations, two printers, one router, the JOPES Development and Integration Contract (JDIC) Local Area Network (LAN), and the Secret Internet Protocol Router Network (SIPRNET) LAN. The diagram does not include the WWMCCS Host connectivity since that connection will be severed. The test connectivity only shows the testing associated with software beyond GCCS Version 2.0 which is the GCCS S&M software.

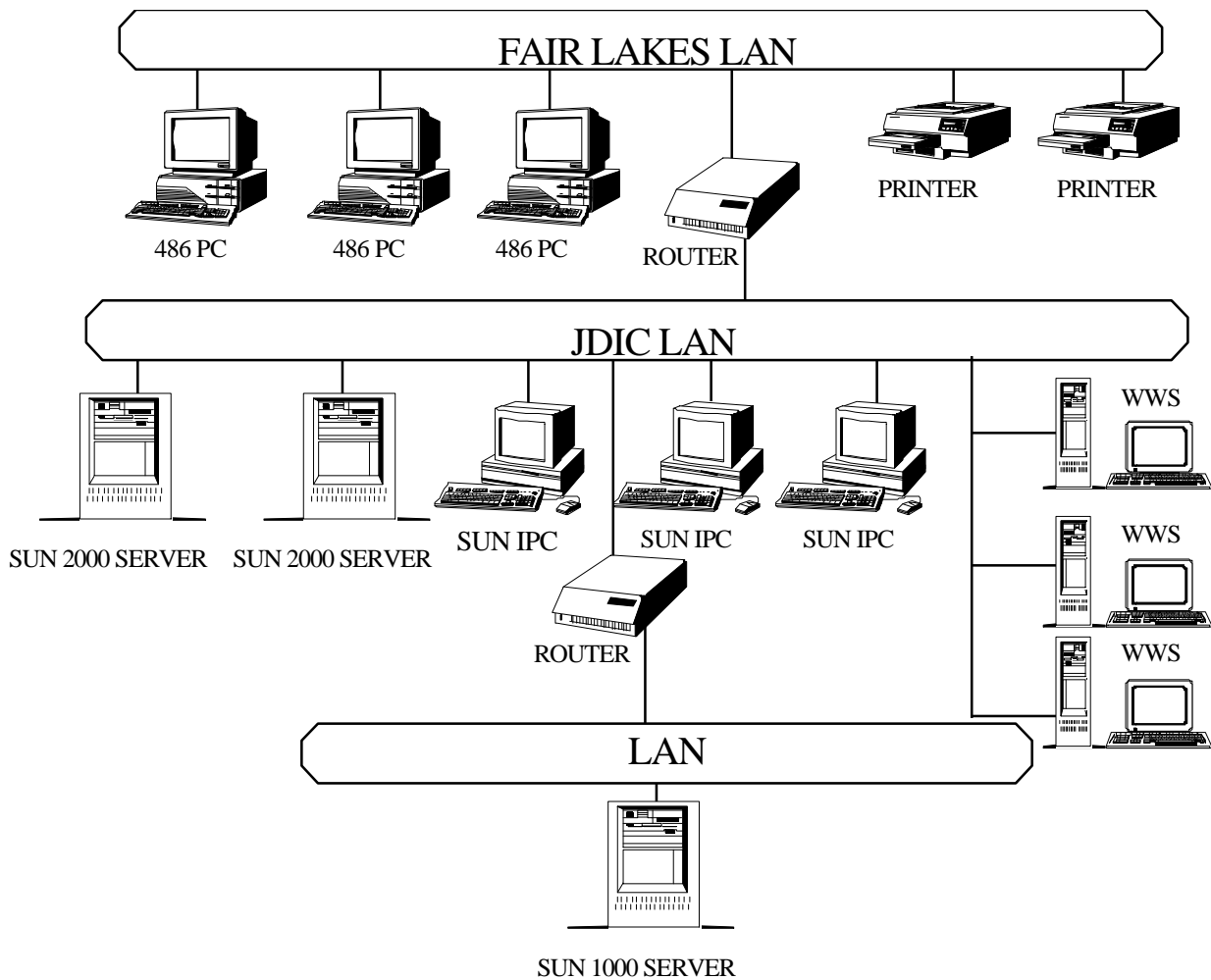


Figure 3-1: GCCS Test Configuration.

The testing environment will operate at the unclassified level throughout this effort. Permissions and passwords provided by the System Administrator will be required to logon to the system. The equipment details are as follows:

- **Sun SPARCserver 2000**
 - 1 Keyboard
 - 1 19" Color Monitor
 - 1 Mouse
 - 4 SPARC Processors
 - 5 12MB Memory
 - 10 2.1GB DSCSI Disk Drives
 - 1 5GB 8mm Tape Drive
 - 1 150MB 1/4-inch Tape Drive
 - 1 9 Track Tape Drive

- 1 CD-ROM Drive
- 1 Ethernet Network Interface Card.

- **Sun SPARCserver 1000**
 - 1 Keyboard
 - 1 19" Color Monitor
 - 1 Mouse
 - 4 SPARC Processors
 - 3 84MB Memory
 - 8 2.9GB DSCSI Disk Drives
 - 1 5GB 8mm Tape Drive
 - 1 150MB 1/4-inch Tape Drive
 - 1 CD-ROM Drive
 - 1 Ethernet Network Interface Card.

- **Workstations**
 - **WWS**
 - 32MB of Addressable Memory
 - 1 33 Megahertz Coprocessor (IIx only)
 - 1 240MB Disk Drive (system disk)
 - 1 240MB Disk Drive for User Data
 - 1 Low Insertion Force Adapter
 - 1 5.25 inch Diskette Drive
 - 1 3.5 inch Diskette Drive
 - 1 150MB Streamer Cartridge Tape Drive
 - 1 Keyboard
 - 1 Mouse and Pad
 - 1 15" or 19" Inch Color Monitor
 - 1 Display Controller
 - 1 Minitec Communications Protocol Converter
 - 1 HP LaserJet II or III with 1.5 MB Memory Printer
 - 1 Apple Laser Writer II/NTX Printer
 - 1 Ethernet Network Interface Card.

 - **Sun IPC**
 - 1 Keyboard
 - 1 17" Color Monitor
 - 1 Mouse
 - 1 SPARC Processor
 - 1 16MB Memory
 - 200MB Hard Drive
 - 1 Ethernet Network Interface Card.

- **486 Personal Computers**
 - 8MB memory on motherboard
 - 1 100+MB hard drive
 - 1 Keyboard and mouse
 - 1 14" Color Monitor (1024X768)
 - 1 Ethernet Network Interface Card.
- **Printers**
 - Any printers compatible with the Ethernet LAN are acceptable. One LAN printer is required to test the capability of directing print jobs to a specific printer.

3.3 PROPRIETARY NATURE AND GOVERNMENT RIGHTS

All software and documentation to be provided or developed under the Defense Enterprise Integration Services (DEIS) contract, including source and executable code, will be delivered to DISA with unlimited rights in accordance with the provisions of DoD Federal Acquisition Requisition (FAR) Supplement 52.227-7013, 52.227-7018, and 52.227-7029. Hardware and development software (not listed above) purchased by the DEIS Contractor to develop and re-engineer the required software will remain the property of the DEIS Contractor. All Commercial Off-the-Shelf (COTS) software products used in the development process retain their respective licensing agreements. Source code generated by the ScreenMachine product is licensed "royalty-free." Any COTS products used in support of this task (e.g., Oracle7) shall be considered Government Furnished Information (GFI), with the appropriate licensing agreement followed by the licensed user.

3.4 INSTALLATION, TESTING, AND CONTROL

The GCCS migration test process will be controlled by the *Software Development Plan for the JOPES Database Migration to GCCS*, and the provisions of this document. All testing will be conducted at the GCCS JOPES Database Migration Test Center located at the SRA Fair Lakes, VA facility. These procedures will be carried out as described later in this section of the document. Migration of the software is discussed in detail in the SDP. Control of the software is discussed in detail in Section 7 of the SDP.

All preliminary software testing must be successfully completed prior to the ST. This activity includes Code and Unit Test (CUT), incremental Software Integration Test (SWIT) and System Integration Test (SIT).

Control of the testing process will be facilitated by dividing the test effort into test sessions. A test session is a scheduled block of time when a set of specific test cases will be run. Test sessions serve as the basis for recording test results.

Software metrics to determine software maturity will track open and closed CRs/PRs by priority and CSCI (Appendix A contains instructions for filling out CRs/PRs). CRs/PRs are evaluated by the Project Configuration Control Board (PCCB). This process is outlined in Appendix A. If the number of open CRs/PRs increases at a faster rate than the number of closed CRs/PRs or if there are an unacceptable number of CRs/PRs open prior to test, the system may not be mature enough to be tested and postponement may be recommended by the Test Director. Refer to Section 5 for additional details on metrics and test data analysis.

During the ST, all test cases will be executed and the test results will be logged and reviewed by the test team at the conclusion of testing. Refer to the Test Schedule in Section 4 for additional details. The testers will record failures or discrepancies on CRs/PRs that will then be sent to CM for resolution. Once the CRs/PRs are resolved and the cause of the failure has been corrected, the test team will conduct regression tests. Responsibilities of each group are provided below.

3.4.1 General Test Approach

As shown in Figure 3-2, a significant development testing effort will precede the system level testing. The testing will consist of Unit Test (conducted by the developers), Segment Integration Test (performed by the developers and testers to verify that functional threads of capability, software enhancements and fixes, are performing properly), and Version Test (conducted by the testers on the software segments). Version Test (sometimes referred to as ST) is conducted on major software releases as defined by the PCCB or when major segments are baselined.

A series of development tests are conducted on the database to ensure that database migration is accurate and that data element quality and referential integrity is maintained. This testing is part of the SIT phase and is conducted by the developers. This activity consists of extracting files from the JOPES database and loading them on the server using SQL Loader and SQL Plus scripts. The data integrity is assured through the use of ORACLE analyze commands. In addition, a series of SIT tests is conducted on the segments to verify that the functional capability of a particular incremental delivery is operating properly. The incremental JOPES software capabilities will be bundled into two deliveries (GCCS Version 2.0 and 2.1) as described below. After the versions have been successfully tested, they will be delivered and simultaneously promoted to Government Acceptance Testing in the operational test environment. Government Acceptance Testing will consist of running the preliminary (working paper) versions of the Version Test test cases. All fixes will be regression tested prior to being incorporated into a formal software release.

Delivery 1 (Version 2.0) was provided to the Government to perform integration and multi-node testing. This version was evaluated during SIT in the test environment. Additionally, new incremental capability and enhancements are verified during Delivery 2 (Version 2.1) SIT testing.

During ST, a record of requirements that were totally satisfied, partially satisfied, or failed to be satisfied is created by the test team. Depending on the test results, the PCCB (via monthly In Progress Review (IPR) meetings) determines when the software will be delivered to the Government for acceptance testing.

During the software maintenance phase, emergency releases may be required. This may occur as a result of government Acceptance Testing or field operational testing. In either case, the Test Director, with inputs from the PCCB, may determine that the risk is low, such as when the change has only minor impact on the other segment software. The only testing necessary is Unit Test and Segment Integration Test in (SIT) which case the software is delivered after SIT.

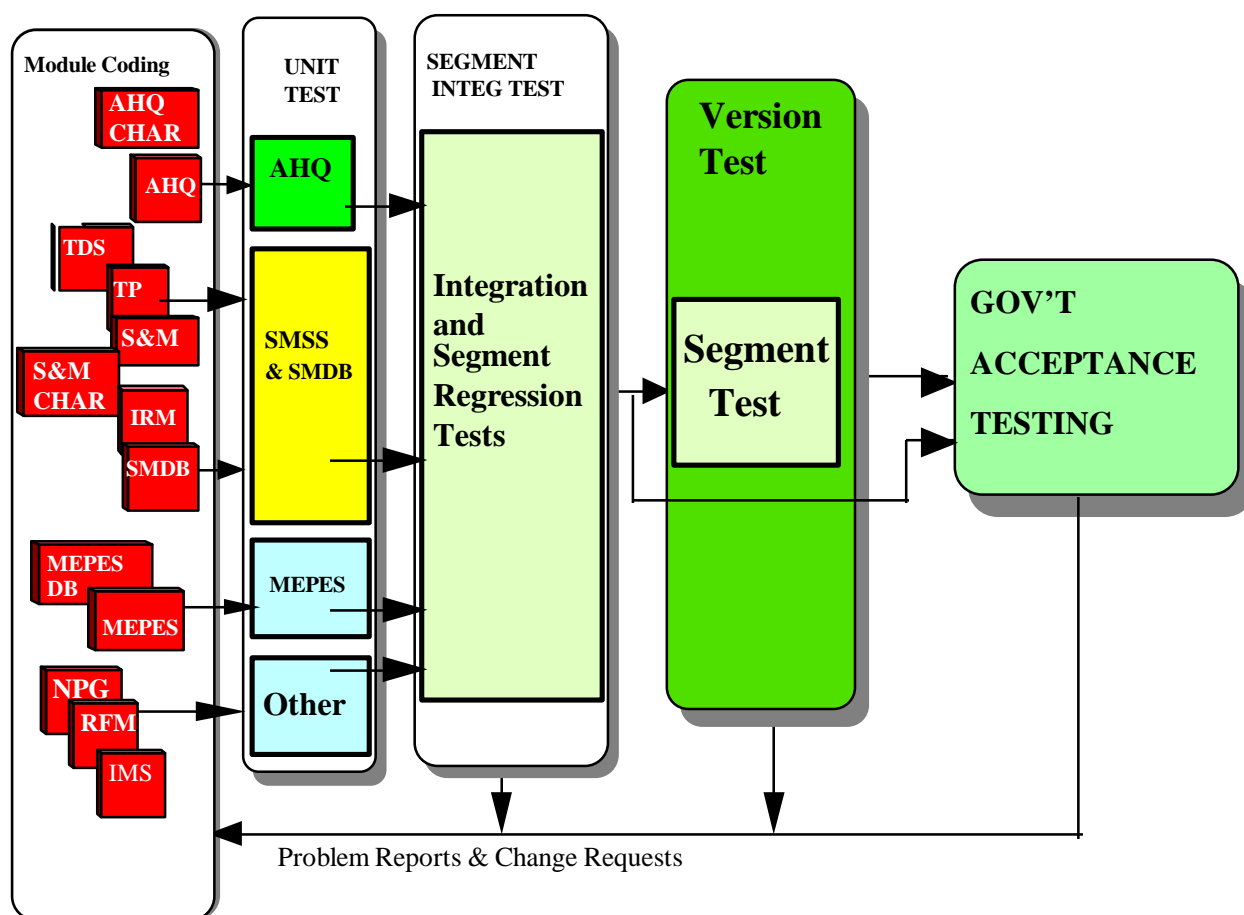


Figure 3-2: Test Overview.

The software testing cycles are shown above. The most significant changes were made to the SS and SMDB segments. Few changes have been made to the SM. However, the AHQ software has been extensively changed. The MEPES changes involve porting MEPES to Solaris 2.3 to interface with the Core Database on the Server. The NPG segment was added to GCCS Version 2.1. Future development work includes porting the segments to Solaris 2.4 and to a Hewlett Packard (HP) 9000 series processor. In addition, individual segments will be enhanced in accordance with government direction.

3.4.1.1 Delivery 1 (Version 2.0). This version of software was delivered for Government testing in March 1995 and at the same time SIT commenced at the SRA operational test environment facility. This version incorporated the following capabilities:

- GCCS Database populated with the proper files and Time-Phased Force Deployment Data (TPFDD) migrated from the JOPES Database on the mainframe to the Server. A list of the files and data being migrated is shown in the SDP.
- S&M Transaction Distribution Services (TDS) was modified to eliminate mainframe dependencies and include the capability to route transactions based on OPLAN distribution. This new architecture is based on transaction distribution among servers using the SIPRNET network topology.
- Information Resource Manager (IRM) functionality was migrated from JOPES on the mainframe to GCCS residing on the Server. The following IRM functionality will be migrated with this version:
 - Init Normal/Limited Ch OPLAN (H1)
 - Change OPLAN Type/Access/Dist (H2)
 - Reset C-Day/TCC Indicators (H7)
 - Delete OPLAN (H8)
 - Set C-Day/L-Hour (H9)
 - Reset Plan Status (HJ)
 - Audit Reports (HO)
 - OPLAN Functional Access Permissions (HQ)
 - OPLAN Functional Access Permissions Report (G).
- Transaction processing was extended to include those transactions needed for proper operation of the network but not included in S&M. An external interface transaction processing capability was included. This capability provided an API and external interface queue for future use.
- IMS/RFM was re-engineered to interface with the Core Database on the Server. This provided the TIP applications with a new source of data for TPFDDs and reference files.
- AHQ was improved to include functionality similar to the JOPES F6 function. The query and reporting capability was expanded from S&M to include the new GCCS database elements.
- The MEPES application was re-homed to interface with the Core Database on the Server.

3.4.1.2 Delivery 2 (Version 2.1). This version of software will be delivered for Government Acceptance and Operational testing. It will include any additional capability and fixes found during the earlier testing. This version will also incorporate the following new capabilities not included in the earlier version.

- Additional IRM functionality will be migrated from JOPES on the mainframe to GCCS residing on the Server. The following new IRM functionality will be migrated with this version.
 - Offload/Reload OPLAN (H3)
 - Save & Recover Local Plans (H4)
 - Local Database Recovery Clean Up (H6)
 - Load OPLAN (HK)
 - Selective Site Data Recovery (HU)
 - OPLAN Network Status (HV)
 - Repair OPLAN Routing (HY).
- AHQ will be improved to include fixes from previous versions and improvements from incorporating capability from other Government Off-the-Shelf (GOTS)/COTS products.
- This delivery of NPG will replicate the NPG functionality currently in JOPES.
- Preliminary testing will begin on porting the JOPES Database Migration software to Solaris 2.4. In addition porting the software to the HP.

3.4.1.3 GCCS Phase IV&V Versions. These versions will continue to enhance the GCCS/JOPES Application and Database Migration. The previous three phases delivered up to and including SRA Version 5.5 and any associated emergency V5.5.X releases. Phase IV includes continuing to support software changes resulting from government acceptance and operational testing and the following:

- Complete testing of both the S&M and System Services segments. A complete suite of S&M Formal Qualification Test (FQT) test cases will be conducted on the S&M segment. The GCCS suite of test cases contained in this document will be run on the System Services segment.
- AHQ and System Services will be enhanced and the new capability will be tested along with regression testing the existing capability.
- New capability associated with the Tape Management System will be developed, tested and delivered in this phase.
- Preliminary development testing will be conducted on porting the JOPES DB Migration software to Solaris Version 2.4. In addition, porting the software to HP - UX 9.X on a HP9000 series processor will also be tested.

- Initial testing will be started on the Individual Manpower Requirements and Available System (IMRAS) system as part of this phase of testing.

3.4.2 Integration Team Responsibilities

The integration team and CM are jointly responsible for ensuring the version integrity of the test environment. The team will:

- Provide management oversight for the integration scheduling of GCCS software
- Coordinate the integration scheduling of new software/software corrections with CM
- Validate the Sun server, Ethernet LAN, and WWS software and hardware configurations required to support migration
- Prepare each assembly and review system resource requirements
- Coordinate with and assist the Test Department.

3.4.3 CM Responsibilities

During GCCS migration, the CM staff is responsible for implementing the day-to-day portions of the CM program. In addition, CM will validate that the software baseline consists of the previous version, plus any added capability and fixes approved by the PCCB. The details of the CM plan are included in Section 7 of the SDP. In general, the CM staff will:

- Control the receipt and exchange of all software and documentation between the Government and the DEIS Contractor
- Establish the baseline for all prototypes received from the government to include the receipt, storage, and accountability of all software code, documentation, and hardware
- Control changes in hardware configurations and software baselines used during GCCS migration
- Perform configuration identification of the test baseline GCCS software and hardware environments
- Perform configuration status accounting and incorporate changes to baseline and status accounting databases
- Retain and update master and critical copies of baseline items (e.g., documents and computer program media) as needed

- Release baseline software and changes
- Collect and prepare materials for configuration audits.

3.4.4 Test Team Responsibilities

The Boeing Team, consisting of an independent SRA group, will prepare test plans and test cases, perform testing, document all discrepancies and deliver the CRs/PRs to CM, and document test results. The test team will include a Test Director and a Quality Assurance (QA) representative who will witness and verify adherence to documented test and CM procedures during testing.

Test Director

The Test Director is responsible for overseeing the testing. Responsibilities includes assigning testers for each group of tests performed. The Test Director is also responsible for providing the metrics outlined in Section 5 and conducting the daily test progress meeting.

Test Team

Prior to testing, the test team is responsible for the preparation of the test plans and test cases as well as performing incremental SIT. During ST, a test progress meeting will be held each day to report the previous day's results, discuss problems encountered, announce major schedule changes, and announce the schedule for further testing and the baseline identification.

During the test session, the testers will identify each test case before executing it. The testers will fail any test that does not execute as expected and issue a CR/PR (refer to Appendix A for instructions on filling out a CR/PR form). The CR/PR will identify the test failure and the software baseline. CRs/PRs will be handled by the PCCB in accordance with the process outlined in Appendix A.

The testers will note any requests for ad hoc testing from members of the project team. If those tests can be executed without interfering with planned tests or disrupting the test schedule, they may be executed at the test team's discretion. Otherwise, the Test Director will schedule their execution. Whenever possible, ad hoc testing will be done at the end of the test session. The procedures followed and results of any ad hoc tests will be recorded for inclusion in the test documentation provided to CM at the conclusion of testing.

The final test logs will identify the test cases that were executed, the date they were executed, the software baseline they were executed against, whether they passed or failed, the test steps where failures occurred, and any CRs/PRs written against each test case. These logs will be signed by testers. When Version Tests are run, the results of testing will be included in the RTS as to whether the test objectives were met. That is, was the requirement fully demonstrated, partially demonstrated, or failed to be demonstrated.

3.4.5 Operation Support

The Computer/Facilities group at the SRA Fair Lakes facility will be expected to provide normal operational support. This support will include the presence of a representative from the group during testing to ensure the system is available during the scheduled times.

3.4.6 Evaluation Criteria

The acceptance criteria for evaluating test results require that the screen displays (windows) printed reports, database modifications, and observed results match the expected results identified in the test case procedures. If the expected results are not obtained, the tester will mark the test step(s) as 'failed' and generate a problem report. The same process is used for unscripted free-play testing if abnormal results are observed. After testing has been completed, the developers, and the test team will analyze the problem reports to determine the source of the problems, the effect of the problems on the system, and the level of effort required to correct the problems. The PCCB will determine the disposition of all problem reports. If a problem is determined to be irrelevant, it will be closed administratively.

The testers will perform an evaluation at the conclusion of each Test Case by completing the entry of the results of each test case run and filling in comments in the appropriate area of the Test Case.

Upon completion of testing, the test team will prepare a report that summarizes the test results. This report will be maintained by the test group and will be turned over to CM when the next major software version is scheduled for test. The test results are briefed at the monthly government In Process Reviews (IPRs).

3.4.7 Acceptance

Based on the test results, the Test Director will determine whether to move forward with fielding the Delivery or recommend additional software enhancements.

SECTION 4 - FORMAL QUALIFICATION TEST IDENTIFICATION

4.1 JOPEs GCCS DATABASE MIGRATION TESTS

The following paragraphs describe tests that contain summary information relative to test cases. Because of the aggressive test schedule, the actual test cases are still being developed in parallel with software requirements and software design and will be revised as needed. They will be treated as working papers until completion of the ST at which time any changes will be submitted to the Government in the form of page changes. These test cases are supplied as Appendices B through J of this document. The Test Plan Architecture is shown in Figure 4-1.

4.1.1 General Test Requirements

The following test requirements are applicable to the tests described below:

- All tests shall verify that appropriate responses, in the form of expected results, are received for each test case.
- All tests shall verify that, where appropriate, database changes result from functions performed by the tester as defined in the expected results column of the test cases.

4.1.2 Test Classes

Individual STs will generally cover verifying operations within major functional boundaries or follow a logical data flow thread through one or more functions. The various test classes include:

- Display (DIS) - Validates the screen contents and format are proper.
- Input (INP) - Assesses ability of system to edit input and either provide error notification or begin the required processing.
- Report (RPT) - Verifies that the system generates the required hard copy report.
- Response (RSP) - Verifies that the system provides the proper response such as updating the database and providing output to the appropriate interface.
- Observe (OBS) - Verifies that established procedures identified in the respective test case are carried out.

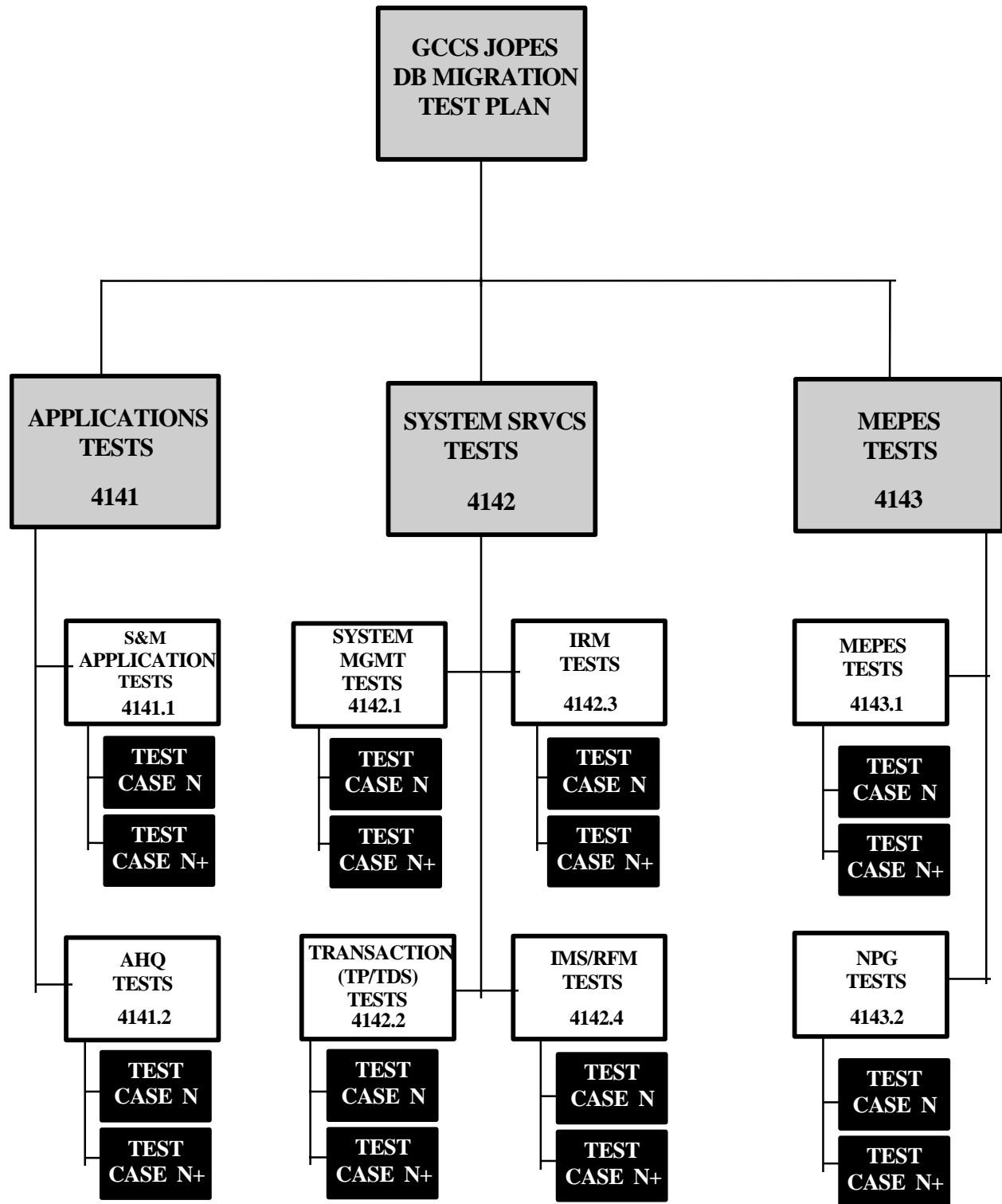


Figure 4-1: Test Plan Architecture.

4.1.2.1 Test Subclasses.

- Nominal (NOM) - Verification of normal functions using nominal inputs.
- Boundary (BND) - Verification of normal function with minimum/maximum input values.
- Erroneous (ERR) - These types of tests include invalid inputs from external sources such as invalid transactions or out of range values contained in valid transactions or other system operator inputs.

4.1.3 Test Levels

The ST will be conducted at the system level.

4.1.4 Test Definitions

Following migration of the JOPES Database to the server, a series of incremental development tests will be conducted: S&M Applications (Apps), S&M System Services, IMS/RFM and MEPES, each with a related suite of sub-tests. Refer to Figure 4-2 which shows Test Class Definitions. Refer to Figure 4-3 which shows Test Objective Development and Figure 4-4 which shows Test Case Determination. These tests are defined in the following paragraphs. These figures describe the process of developing the test objectives and determining test cases. The Test Assignment Table in each portion of this test plan shows the various tests traced to the test number and test classification. Additionally, Appendix K provides the traceability from the specification to the test case.

In the following paragraphs a Project Unique Identifier (PUI) is included in parenthesis following the test name. The PUI at this level refers to the software area and is used in the test names and test cases that follow. This technique provides a means of tracking the tests in the RTS and identifying the tests in this document.

The test cases are assigned to a particular software area test to facilitate tracing them. The first three numbers in each test case are always 414. The fourth number (1, 2, or 3) identifies the software area.

4141 = S&M Apps/AHQ

4142 = S&M System Services

4143 = MEPES/NPG

The fifth number, identifies a specific software test series, by test number, such as AHQ Tests which is the second series of tests in the applications section. For example:

41411 = S&M Apps Tests

41412 = AHQ Tests

The sixth and subsequent numbers following the dash represent the test case number of the specific software area test case. For example:

414**11-13** = Apps XRUNNER Test Case

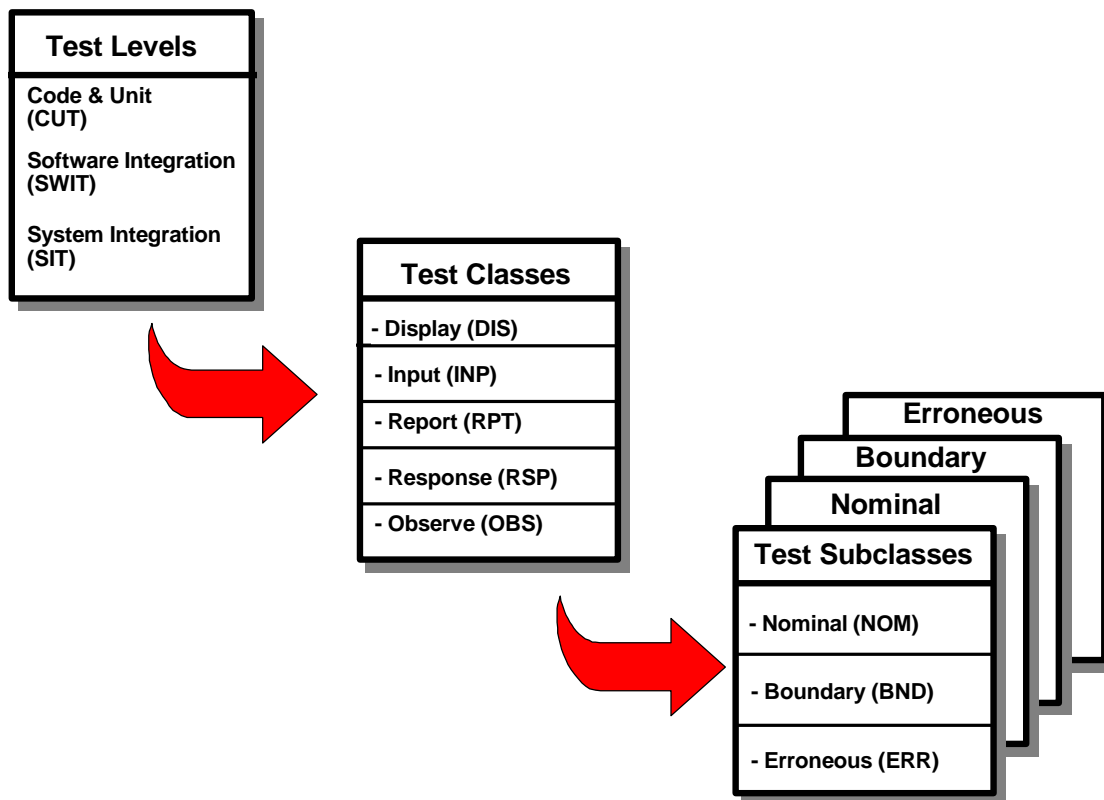


Figure 4-2: Test Class Definitions.

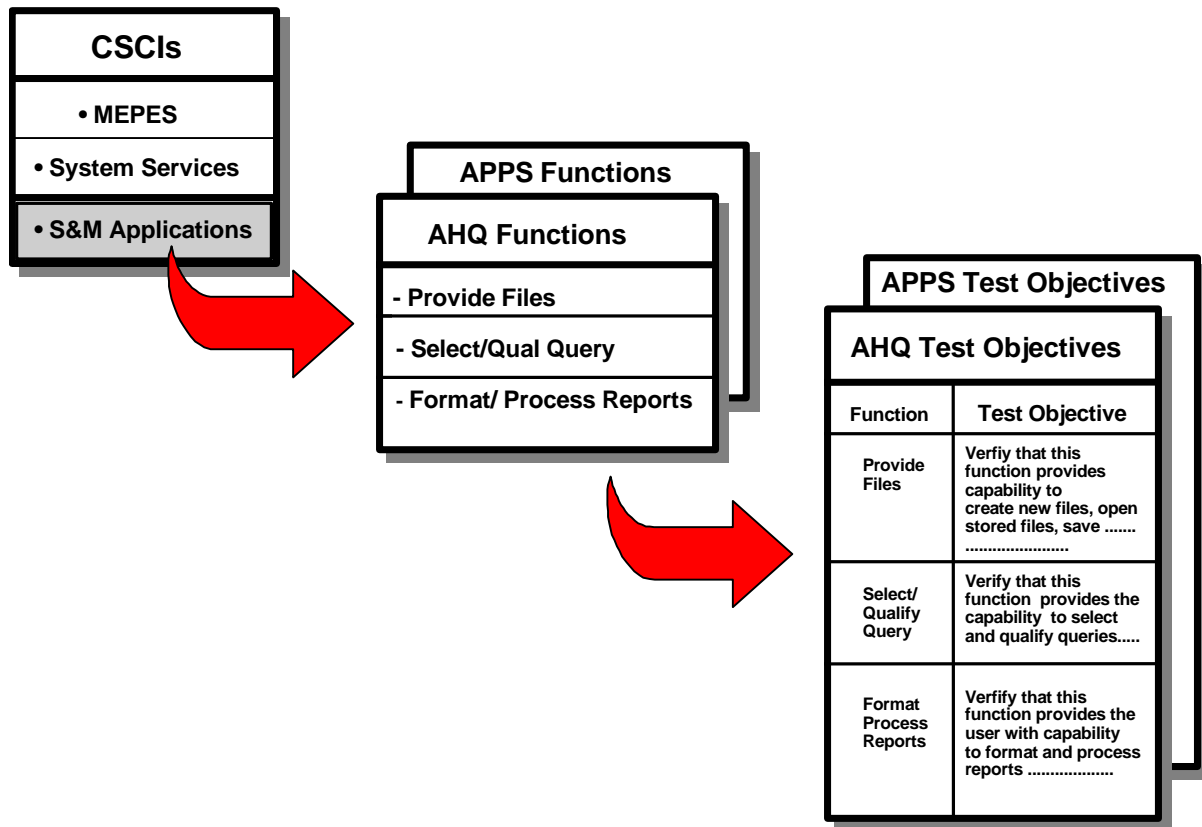


Figure 4-3: Development of Test Objectives.

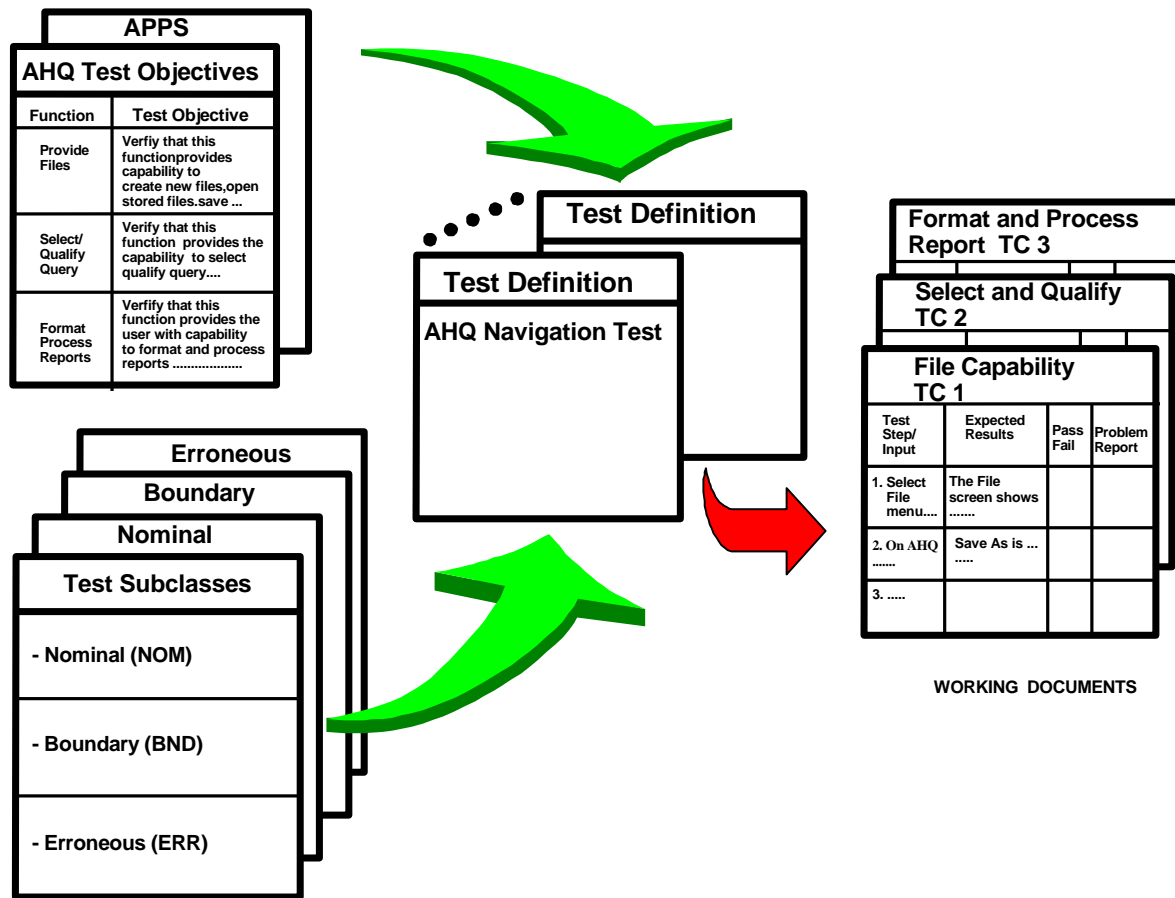


Figure 4-4: Test Case Determination.

4.1.4.1 S&M Apps/AHQ Tests (4141). The table below traces the test number and test name to test classes and test subclasses. Requirements traceability is being accomplished in parallel with the development of this test plan. The requirements will be traced to the test case in the RTS. A copy of the applicable sections of the RTS is included in Appendix K.

Table 4-1: Applications Test Assignments.

TEST NUMBER	TEST NAME	TEST CLASS	TEST SUB CLASS
4141.1	S&M Apps Tests	DIS, RPT	NOM
4141.2	AHQ Apps Tests	INP, DIS, RPT	NOM, BND, ERR

4.1.4.1.1 S&M Apps Tests (4141.1).

4.1.4.1.1.1 Test Objective. To verify that the S&M Apps software functionality is not degraded as a result of implementing the GCCS JOPEs Database Migration software changes into the Apps/AHQ, System Services, and MEPES.

Verify that a subset of the original S&M FQT test cases can be successfully conducted to ensure that changes made to the SM segment cause no adverse affects on the S&M Apps. The Sea Carrier and Reports Test functionality will be regression tested to verify that it meets the nominal requirements that were validated during the S&M FQT. This testing will be fully automated using the XRunner test tool.

Verify the basic functionality of S&M Apps using the CUI. The test team will conduct regression testing of this application/functionality as software fixes and enhancements are provided by the software development team.

4.1.4.1.1.2 Assumptions and Constraints.

4.1.4.1.1.2.1 Test Environment/Conditions. This testing shall be conducted in a single server test environment. The testing process will include Computer Automated Software Testing (CAST) using the XRunner regression test tool wherever possible.

All XRunner testing must be run from the server X-terminal. The S&M Applications software is a stable environment which was successfully tested during the S&M FQT.

All manual testing will be conducted from a WIS Workstation or a PC with the PC-Xware application installed.

4.1.4.1.1.2.2 Prerequisites. The GCCS JOPEs Test Database must be loaded on the test environment server.

The test database must contain OPLANs 2222F, 9311A, and 9311B, which will be used for these tests.

XRunner test script files must be debugged and ready for testing.

4.1.4.1.1.3 Type of Data Recorded. Test step results will be recorded by date in the PASS or FAIL/PR column. If a step fails, the PR number should be entered in the PR test log book.

Automated pass/fail test reports supplied by the XRunner test tool will be used for the GUI test cases that are now automated.

4.1.4.1.1.4 Test Case Summary. A summary of the test cases is contained in the table below. These test cases exercise the Sea Carrier and all of the S&M Reports functionality of the Apps CSCI. In addition to the individual CUI test cases shown below, a single automated test case (41411-13) will be run and will run each of the CUI test cases, in a batch mode.

Table 4-2: S&M Apps Test Case Summary.

TC NUMBER	DESCRIPTION
41411-1	ADD SEA CARGO/PAX CARRIER -- CUI
41411-2	COPY CARRIER -- CUI
41411-3	ADD GROUP REQUIREMENT ALLOCATIONS - SEA -- CUI
41411-4	ADD GROUP REQUIREMENT MANIFESTS - SEA -- CUI
41411-5	REVIEW OR MODIFY PLANNED ITINERARY - SEA -- CUI
41411-6	MOVEMENT SCHEDULE REPORT -- CUI
41411-7	MOVEMENT ALLOCATION/MANIFEST REPORT -- CUI
41411-8	FORCE MODULE SUMMARY REPORT -- CUI
41411-9	OPLAN DEPLOYMENT STATUS REPORT -- CUI
41411-10	DEMANIFEST CARRIER -- CUI
41411-11	DEALLOCATE CARRIER -- CUI
41411-12	DELETE CARRIER -- CUI
41411-13	APPS XRUNNER TEST CASE

4.1.4.1.2 AHQ Tests (4141.2).

4.1.4.1.2.1 Test Objective. To verify that the expanded functionality (improved user navigation and user domain classes) function properly. This includes validating that the scope of AHQ has been expanded to include the data elements identified to support specific GCCS capabilities.

Specifically, these tests evaluate the improved user navigation features and expanded scope capability, that includes S&M, Requirements, and Unit Information data elements in the migrated database to ensure that they are in accordance with the requirements. These tests exercise file handling, as well as AHQ defaults, examine HELP features and ensure the required options are

available to the user. In addition, these tests verify that AHQ can process files, queries, reports, view files, and exercise processing options.

The test team will conduct regression testing of this application/functionality as software fixes and enhancements are provided by the software development team.

4.1.4.1.2.2. Assumptions and Constraints.

4.1.4.1.2.2.1 Test Environment/Conditions. This testing shall be conducted in a single server test environment. The testing process may utilize XRunner using the server X-terminal.

All manual testing will be conducted from a WIS Workstation or a PC with the PC-Xware application installed.

4.1.4.1.2.2.2 Prerequisites. The GCCS JOPES Test Database must be loaded on the test environment server.

4.1.4.1.2.3 Type of Data Recorded. Test step results will be recorded by date in the PASS or FAIL/PR column. If a step fails the PR and number should be entered in the PR test log book. Automated pass/fail test reports will be supplied by the XRunner test tool.

4.1.4.1.2.4 Test Summary. A summary of the test cases is contained in the table below. These test cases will evaluate the screen navigation, options, and editing capability of AHQ. The five major menu selections will be evaluated along with the Editing capability.

The AHQ domains will be exercised by conducting queries, producing reports, and verifying required options. These tests will exercise the data retrieval options of S&M, Requirements, and Unit Information to ensure that the reports meet the parameters specified by the requirements.

The queries and reports will be saved so that they may be repeated later.

Automated test cases that will likely replace the manual AHQ Drop-Down Menu Navigation Test and the Screen Test cases are shown in the following table.

Table 4-3: AHQ Test Case Summary.

TC NUMBER	DESCRIPTION
41412-1	AD HOC QUERY DROP-DOWN MENU NAVIGATION TEST
41412-2	SCREEN TEST
41412-3	REQUIREMENTS QUERY TEST
41412-4	SCHEDULING AND MOVEMENT QUERY TEST
41412-5	UNIT INFORMATION QUERY TEST

TC NUMBER	DESCRIPTION
41412-6	REQUIREMENTS WITH MOVEMENT QUERY TEST
41412-7	MOVEMENT WITH REQUIREMENTS QUERY TEST
41412-8	REQUIREMENTS WITH UNIT INFORMATION QUERY TEST
41412-9	REQUIREMENTS WITH S&M WITH UNIT INFO QUERY TEST
41412-10	AHQ DATA INTEGRITY QUERY TEST (REQUIREMENTS WITH MOVEMENTS)
41412-11	AHQ DATA INTEGRITY QUERY TEST (REQ WITH S&M WITH UI)
41412-12	AHQ -- CUI

4.1.4.2 System Services Tests (4142). The table below traces the test number and test name to the test classes and test subclasses. Requirements traceability is being accomplished in parallel with the development of this test plan. The requirements will also be traced to the test cases in the RTS. A copy of the applicable sections of the RTS is included in Appendix K.

Table 4-4: S&M System Services Test Assignment.

TEST NUMBER	TEST NAME	TEST CLASS	TEST SUB CLASS
4142.1	System Management Tests	DIS, RSP, RPT, OBS	NOM, ERR
4142.2	Transaction Tests (TP/TDS)	INP, RSP	NOM, ERR
4142.3	IRM Tests	INP, RSP, DIS	NOM, BND, ERR
4142.4	IMS/RFM Tests	DIS, RSP	NOM

4.1.4.2.1 System Management Tests (4142.1).

4.1.4.2.1.1 Test Objective. The overall objective of these tests is to verify that existing capability is not degraded as a result of the changes being made to this CSCI. In addition, functional capability which is being either enhanced or replaced will be tested extensively.

The database Backup and Recovery test shall verify the software's ability to perform backup and recovery operations. This includes full and cumulative backup and restoration operations.

The initial database load is verified by use of the ORACLE data element integrity checking performed during the initial data load. This test objective is satisfied during the process of extracting data from the mainframe and loading it onto the test server(s).

Another objective is to verify that the Merge Requirements and Create JOPES TPFDD functionality migrated properly.

The test team will conduct regression testing of this application/functionality as software fixes and enhancements are provided by the software development team.

4.1.4.2.1.2 Assumptions and Constraints

4.1.4.2.1.2.1 Test Environment/Conditions. These tests require a two server test environment.

These tests use two WIS Workstations or PCS with X-ware, one connected to each of the servers to control TDS. Backup and Recovery will also be controlled from these workstations.

4.1.4.2.1.2.2 Prerequisites. A test TPFDD must be loaded in the Core Database on two of the Sun Servers. The tapes and/or disk files needed to merge requirements will be loaded and ready for test.

4.1.4.2.1.3 Type of Data Recorded. Test step results will be recorded by date in the PASS or FAIL/PR column. If a step fails the PR and number should be entered in the PR test log book.

4.1.4.2.1.4 Test Summary. A summary of the test cases is contained in the table below. The first test, Backup and Recovery, will evaluate GCCS enhancements. The tester will exercise the Merge Requirements and Create JOPES TPFDD functions.

Table 4-5: System Management Test Case Summary.

TC NUMBER	DESCRIPTION
41421-1	SYSTEM BACKUP AND RECOVERY
41421-2	MERGE REQUIREMENTS (B3)
41421-3	CREATE JOPS TPFDD (B8)
41421-4	INITIAL DATABASE LOAD TEST
41421-5	CREAT JOPS TPFDD (B8) AND MERGE REQUIREMENTS (B3) -- CUI

4.1.4.2.2 Transaction Tests (4142.2).

4.1.4.2.2.1 Test Objective. The overall objective of these tests is to verify that the GCCS Transaction Distribution capability distributes GCCS transaction data and that the OPLAN routing is functioning properly.

Another objective is to simulate degraded operation of the node and the network to ensure the server holds transactions during the simulated failure and restores the database in the affected server(s) when normal operation is resumed.

Additionally, these tests are intended to verify that newly created transactions and changes to existing transactions perform as specified in the Software Requirements Specification (SRS) and support documentation. Intra- and internet TDS requirements will be verified during these tests.

The test team will conduct regression testing of this application/functionality as software fixes and enhancements are provided by the software development team.

4.1.4.2.2.2 Assumptions and Constraints.

4.1.4.2.2.2.1 Test Environment/Conditions. This testing requires three servers and a two node test environment.

These tests use three WIS Workstations or PCS with X-ware, one each connected to each of the servers to monitor transactions and control Internet Protocol addresses and TDS to simulate intra- and internode failures.

4.1.4.2.2.2.2 Prerequisites. An exact copy of a TPFDD must be present on all servers included in the test. An application capable of creating transactions must be loaded and operable by the tester. A method of monitoring the transaction or verifying the transaction has operated correctly, must be available on the destination server.

The test database must be loaded and the databases on all three servers must be synchronized. The OPLAN functional access must be established prior to starting these tests.

4.1.4.2.2.3 Type of Data Recorded. Test step results will be recorded by date in the PASS or FAIL/PR column. If a step fails the PR and number should be entered in the PR test log book.

4.1.4.2.2.4 Test Summary. The tester makes a change to a TPFDD or movement record that causes a transaction to be created. The system automatically updates the appropriate database located on the user's server and the other server/servers. The tester verifies that the same change was made to each database involved in the test. Transaction monitors, journalling, and audit reports are used to verify transactions during this testing.

Simulated failures will be induced by disconnecting the server from its LAN connection. Database distribution recovery will be evaluated by restoring the faulted server and examining the databases after synchronization has occurred. A summary of the test cases is contained in the table below.

A test stresses the Transaction Distribution Services and tests offloading and reloading a large OPLAN (with approximately 210K transaction records) between two Servers. The test involves Transaction Processor Management, Transaction Distribution Management, and Archiving as well as monitoring and send and receive queues and tables space on both servers.

Table 4-6: Transaction Processing Test Case Summary.

TC NUMBER	DESCRIPTION
41422-1	TRANS-XXX-FORCE-MODULE (DESCDT-INDXDT-TITLDT-DLFMDT-JJDSDT)
41422-2	TRANS-FM-EXCLUDE (STRYDT)
41422-3	TRANS-BQ-DATA-RECORD (DATEBT)
41422-4	TRANS-JD-FORCE-DATA (ULNUBT)
41422-5	TRANS-NON-UNIT-DATA (NRNUBT)
41422-6	TRANS-NS-DATA (NSCGBT)
41422-7	TRANS-SM-CARRIER-DATA/TRANS-SM-CARRIER-NEW-DATA (SCHDET-SCHPET)
41422-8	TRANS-SM-MANIFEST-DATA/TRANS-SM-MANIFEST-NEW-DATA (MANIET-MANPET)
41422-9	TRANS-SM-DIV-CHG-DATA (DICHET)
41422-10	TRANS-CH-PLAN-INIT (INITHT)
41422-11	TRANS-IRM-DATA (CDAYHT-RESTHT)
41422-12	TRANS-PLAN-DATA (PLNUAT)
41422-13	TRANS-SYNC-DATA (SYNCHT)
41422-14	TRANS-AGENCY-DATA (PFMUAT)
41422-15	TRANS-USERID-AC (USERHT) (N/A -- Requirement Change)
41422-16	BASELINE LOCAL NETWORK (1 SITE, 2 OR MORE SERVERS)
41422-17	BASELINE WIDE AREA NETWORK (2 SITES, 3 SERVERS)
41422-18	SOURCE SERVER FAILURE
41422-19	DESTINATION SERVER FAILURE
41422-20	DISTANT SERVER FAILURE
41422-21	TDS STRESS TEST

4.1.4.2.3 IRM Tests (4142.3).

4.1.4.2.3.1 Test Objective. Verify that the IRM functionality is not degraded as a result of moving IRM from the mainframe DPS8 to the Sun Server. Each of the functions identified below will be extensively tested to ensure that they meet the requirements. IRM provides both the technical and functional managers with several tools for resetting the database and auditing the system activity. These functions must be tested to ensure OPLAN accuracy.

The test team will conduct regression testing of this application/functionality as software fixes and enhancements are provided by the software development team.

4.1.4.2.3.2 Assumptions and Constraints.

4.1.4.2.3.2.1 Test Environment/Conditions. Testing shall be performed on a multiple server test environment. IRM functionality will also be used during Transaction Processing and Transaction Distribution testing, refer to the 41423 series of test cases, in a multiple server environment.

4.1.4.2.3.2.2 Prerequisites. IRM functions must be moved from the mainframe to the Sun Server and a user interface (GUI) must be developed to allow access. Predetermined test TPFDD and appropriate permissions are resident in the server and the database.

4.1.4.2.3.3 Type of Data Recorded. Test step results will be recorded by date in the PASS or FAIL/PR column. If a step fails the PR and number should be entered in the PR test log book.

4.1.4.2.3.4 Test Summary. Each function migrated to the Sun Server shall be tested by exercising that function against a predetermined TPFDD. IRM has the following functions, listed by function code:

H1	Init Normal/Limited/Ch OPLAN
H2	Change OPLAN Type Access/Dist
H3	Offload/Reload OPLAN
H4	Save and Recover Local OPLANs
H6	Local Database Recovery Clean Up
H7	Reset C-Day/TCC Indicators
H8	Delete OPLAN
H9	Set C-Day/L-Hour
HJ	Reset Plan Status
HK	Load OPLAN
HO	Audit Report
HQ	OPLAN Functional Access Permissions
HU	Selective Site Data Recovery
HV	OPLAN Network Status
HY	Repair OPLAN Routing.

Table 4-7: IRM Test Case Summary.

TC NUMBER	DESCRIPTION
41423-1	INIT NORMAL/LIMITED/CH OPLAN
41423-2	CHANGE OPLAN TYPE ACCESS/DIST
41423-3	OFFLOAD/RELOAD OPLAN
41423-4	RESET C-DAY/TCC INDICATORS
41423-5	DELETE OPLAN
41423-6	SET C-DAY/L-HOUR
41423-7	RESET PLAN STATUS
41423-8	AUDIT REPORT
41423-9	OPLAN FUNCTIONAL ACCESS PERMISSIONS AND REVIEW
41423-10	SELECTIVE SITE DATA RECOVERY
41423-11	OPLAN NETWORK STATUS
41423-12	LOCAL OPLAN DATABASE RECOVERY CLEANUP
41423-13	LOAD OPLAN
41423-14	JOURNALLING
41423-15	INIT NORMAL/LIMITED/CH OPLAN -- CUI
41423-16	OFFLOAD/RELOAD OPLAN -- CUI
41423-17	DELETE OPLAN -- CUI
41423-18	SET C-DAY/L-HOUR -- CUI
41423-19	RESET PLAN STATUS -- CUI
41423-20	OPLAN FUNCTIONAL ACCESS PERMISSIONS AND REVIEW -- CUI

4.1.4.2.4 IMS/RFM Tests (4142.4).

4.1.4.2.4.1 Test Objective. To verify that the IMS and RFM functionality is not degraded as a result of the re-engineering effort migrating the JOPES Database from the mainframe DPS8 to the Sun Server. IMS provides a means to move TPFDD files between the Core Database and applications in the format required by that application. RFM provides a means to move reference files from the Core Database to an application in the format required by that application.

The test team will conduct regression testing of this application/functionality as software fixes and enhancements are provided by the software development team.

4.1.4.2.4.2 Assumptions and Constraints.

4.1.4.2.4.2.1 Test Environment/Conditions. Testing shall be performed on a single server test environment. IMS/RFM will be configured to place a file in a directory. The file will then be moved to the directory and examined to ensure data integrity for the DART and JFAST applications.

4.1.4.2.4.2.2 Prerequisites. TPFDD files must be loaded in the Core Database on the Sun Server.

Reference files must be loaded in the Core Database on the Sun Server.

4.1.4.2.4.3 Type of Data Recorded. Test step results will be recorded by date in the PASS or FAIL/PR column. If a step fails the PR and number should be entered in the PR test log book.

4.1.4.2.4.4 Test Summary. The function of IMS is to provide a means to move TPFDD data between the Core Database and applications. IMS reads the TPFDD data on the Core Database, converts it to the proper format, selects the appropriate data elements needed by the specific application, and loads the TPFDD data into the application/directory.

RFM has two functions: UPDATE and LOAD. UPDATE retrieves the latest version of the reference file from the Core Database into RFM. LOAD copies the reference file from RFM into the application in the format required by that application. The application then processes this input data.

A summary of the test cases is contained in the table below.

Table 4-8: IMS/RFM Test Case Summary.

TC NUMBER	DESCRIPTION
41424-1	MOVE TPFDD DATA FROM THE CORE DATABASE TO IMS
41424-2	TPFDD FILE TRANSFER FROM IMS TO DART
41424-3	TPFDD FILE TRANSFER FROM IMS TO JFAST
41424-4	UPDATE GEOFILE, TUCHA, CHSTR, AND ASSETS FROM CORE DATABASE
41424-5	LOAD GEOFILE, TUCHA, AND CHSTR FROM RFM TO DART
41424-6	LOAD GEOFILE, TUCHA, AND CHSTR FROM RFM TO JFAST/MEPES

4.1.4.3 MEPES Tests (4143). The table below traces the test number and test name to the test classes and test subclasses. Requirements traceability is being accomplished in parallel with the development of this test plan. The requirements will also be traced to the test case in the RTS. A copy of the applicable sections of the RTS will be appended to this document with the final submission.

Table 4-9: MEPES CSCI Test Assignment.

TEST NUMBER	TEST NAME	TEST CLASS	TEST SUB CLASS
4143.1	MEPES Data Transfer	INP, DIS, RPT	NOM
4143.2	NPG Tests	INP, DIS, RPT	NOM

4.1.4.3.1 MEPES Data Transfer Tests (4143.1).

4.1.4.3.1.1 Test Objective. To verify that the MEPES Application CSCI functionality is not degraded as a result of implementing the GCCS JOPES Database Migration software changes into the MEPES CSCI.

To verify that a set of test cases can be successfully conducted to ensure that the MEPES data transfer capability has no adverse affects. The MEPES data transfer functionality will be validated with regression testing.

The test team will conduct regression testing of this application/functionality as software fixes and enhancements are provided by the software development team.

4.1.4.3.1.2 Assumptions and Constraints. This testing shall be conducted on a single server test environment.

All manual testing will be conducted from a SUN, WIS Workstation, or a PC with the PC-Xware application installed.

4.1.4.3.1.2.1 Test Environment/Conditions.

4.1.4.3.1.2.2 Prerequisites. The GCCS JOPES Test Database must be loaded on the test environment test server.

The MEPES Test Database must be loaded on the test environment test server. This test database must contain a relevant OPLAN which will be used for these tests.

4.1.4.3.1.3 Type of Data Recorded. Test step results will be recorded by date in the PASS or FAIL/PR column. If a step fails the PR and number should be entered in the PR test log book.

4.1.4.3.1.4 Test Summary. A summary of the test cases is contained in the table below. Each title describes the MEPES menu path required to test the data transfer requirement.

Table 4-10: MEPES Reference Data Test Case Summary.

TC NUMBER	DESCRIPTION
41431-1	REFERENCE DATA, CREATE, SERVICE
41431-2	REFERENCE DATA, CREATE, CINC
41431-3	REFERENCE DATA, CREATE, JOINT
41431-4	REFERENCE DATA, BROWSE, SERVICE
41431-5	REFERENCE DATA, BROWSE, CINC
41431-6	REFERENCE DATA, BROWSE, JOINT
41431-7	REFERENCE DATA, MODIFY, SERVICE
41431-8	REFERENCE DATA, MODIFY, CINC
41431-9	REFERENCE DATA, MODIFY, JOINT
41431-10	REFERENCE DATA, DELETE
41431-11	REFERENCE DATA, TRANSFER
41431-12	REFERENCE DATA, LIST FILES
41431-13	REFERENCE DATA, REPORTS
41431-14	PLANNING TOOLS, PAR, CREATE
41431-15	PLANNING TOOLS, PAR, MODIFY
41431-16	PLANNING TOOLS, PAR, PAR COPY
41431-17	PLANNING TOOLS, PAR, DELETE PAR
41431-18	PLANNING TOOLS, PAR, DELETE OPLAN
41431-19	PLANNING TOOLS, PAR, LIST FILES
41431-20	PLANNING TOOLS, PAR, REPORTS
41431-21	PLANNING TOOLS, MPF, CREATE
41431-22	PLANNING TOOLS, MPF, MODIFY
41431-23	PLANNING TOOLS, MPF, COPY
41431-24	PLANNING TOOLS, MPF, DELETE
41431-25	PLANNING TOOLS, MPF, LIST FILES
41431-26	PLANNING TOOLS, MPF, REPORTS
41431-27	PLANNING TOOLS, MWF, CREATE

TC NUMBER	DESCRIPTION
41431-28	PLANNING TOOLS, MWF, DELETE MWF
41431-29	PLANNING TOOLS, MWF, MODIFY MWF
41431-30	PLANNING TOOLS, MWF, EXECUTE PLG/MPM
41431-31	PLANNING TOOLS, MWF, CALCULATIONS
41431-32	PLANNING TOOLS, MWF, TRANSFER
41431-33	PLANNING TOOLS, MWF, LIST FILES
41431-34	PLANNING TOOLS, MWF, PLG/MPM REPORTS
41431-35	PLANNING TOOLS, TPFDD ACTIONS
41431-36	PLANNING TOOLS, HAND BUILD PAR, CREATE
41431-37	PLANNING TOOLS, HAND BUILD PAR, MODIFY
41431-38	MEPES ASSESSMENT

4.1.4.3.2 NPG Tests (4143.2).

4.1.4.3.2.1 Test Objective. To verify that the NPG will replicate the WWMCCS mainframe NPG functionality in the GCCS client/server environment.

To verify that a set of test cases can be successfully conducted to ensure that NPG can receive data from MEPES, generate Non-Unit TPFDD data, and store that data on the GCCS Core Database with no adverse affects.

The test team will conduct regression testing of this application/functionality as software fixes and enhancements are provided by the software development team.

4.1.4.3.2.2 Assumptions and Constraints. This testing shall be conducted on a single server test environment.

All manual testing will be conducted from a SUN, WIS Workstation or a PC with PC-Xware application installed.

4.1.4.3.2.2.1 Test Environment/Conditions.

4.1.4.3.2.2.2 Prerequisites. The GCCS JOPES Test Database must be loaded on the test environment test server.

The MEPES Medical Working File (MWF) must be loaded on the test environment test server. This test MWF must contain relevant OPLAN information which will be used for this test.

4.1.4.3.2.3 Type of Data Recorded. Test step results will be recorded by date in the PASS or FAIL/PR column. If a step fails the PR and number should be entered in the PR test log book.

4.1.4.3.2.4 Test Summary. A summary of the test cases is contained in the table below. Each title describes the NPG menu path required to test the data transfer requirement.

Table 4-11: NPG Test Case Summary.

TC NUMBER	DESCRIPTION
41432-1	NPG DROP-DOWN MENU NAVIGATION TEST
41432-2	NPG PERSONNEL WORKING FILE (PWF)
41432-3	NPG SCREEN TEST
41432-4	NPG TPFDD BUILD

4.1.5 Test Schedule

Figure 4-4 shows the Summary Test Schedule. The Boeing Team will complete GCCS Version 2.1 testing, including any high priority problem resolution regression testing. Version 2.1 includes the non-critical enhancements developed after the first release (Delivery 1). It also includes fixes directed by the PCCB resulting from test of the Version 2.0 release.

The ST will consist of a series of daily test sessions which will be briefed at a daily test status meeting. The test status meeting will include the agenda for the day, test objectives, test configuration, test cases, and a discussion of any test related issues.

Regression testing will be conducted as needed to verify that software fixes have been implemented properly. This includes rerunning the test case where the failure was first found, plus any other test cases identified by the developers and testers, depending on the impact of the software change. In addition all test cases associated with the segment that was changed will be conducted.

Regression testing will occur prior to version ST. During the version testing, it may be necessary to perform this testing of fixes before we proceed to additional testing that is impacted by the fix. Regression testing will also be performed toward the end of ST and following it, to support Government testing.

Test cases will require planned sequences so that tests will not interfere with each other. Some test cases can be run in parallel, while others will require a specific sequence of activities.

Metrics will be maintained during the ST and will be briefed at the monthly IPRs.

Test data will be delivered to CM where it will be archived for future reference. Test Case changes will be provided to the Government. The software will then be promoted to Government Acceptance testing.

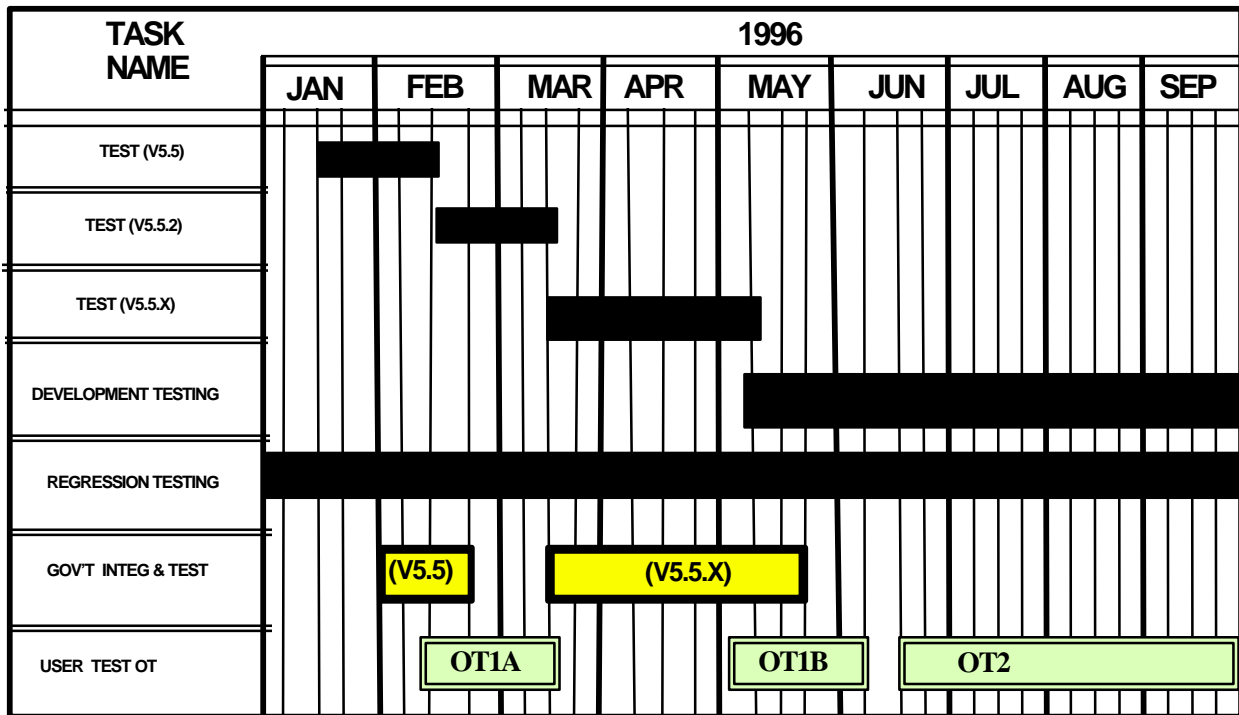
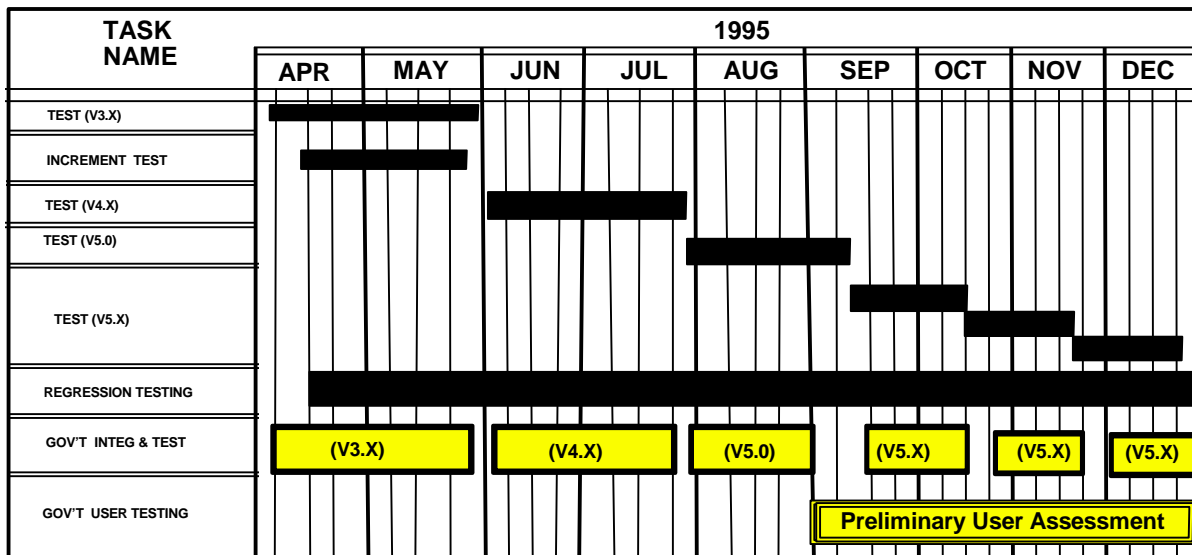


Figure 4-5: Test Schedule.

SECTION 5 - DATA RECORDING, REDUCTION, AND ANALYSIS

GCCS JOPES Database Migration CM procedures (reference Section 7 of the SDP) will be used to control software and hardware used in the testing process, beginning with the installation of the test environment and continuing through the entire Database Migration effort.

Prior to beginning the ST, the integration team will prepare the software test environment by loading the system/support software, the test database as prepared by the test team and application software provided by CM. Testers will follow pre-approved test cases and test results will be logged for each test session. If there are any failures, or if the system does not perform as expected, the testers will write CRs/PRs, as described in Appendix A. At the completion of the test session, new software may be loaded to create a new test environment and the appropriate regression testing will be conducted.

5.1 DATA RECORDING

Test data sheets from the test cases will be collected daily by the Test Director. Test logs will be kept during the test session to record test results, issues, and anomalies. Daily meetings will be held to report the previous day's results, cumulative test results will also be reported.

During the Database Migration project, CRs/PRs will be issued for any software or test cases that fail. CRs/PRs will be turned over to CM to be recorded and to the developers for quick resolution. At the end of each test session, pass/fail checklists will be completed. CM will maintain a copy of all test data.

5.2 DATA REDUCTION

Test results will be correlated and prepared in a manner that will aid the test team in evaluating the progress of testing. Metrics will be divided in two categories; those provided by the test team to reflect test progress/test success and those provided by CM to reflect software stability.

5.2.1 Test Team Collected Metrics

Test team metrics are concerned with showing test progress. The total number of scheduled test cases is compared with the number of completed cases to determine progress at the daily test meetings.

- Number of scheduled test cases
- Number of completed test cases.

Test team metrics will include test success in requirements coverage and will be provided by the Test Director at the monthly IPRs.

- Total number of requirements
- Number of requirements demonstrated
- Number of requirements partially demonstrated
- Number of requirements not demonstrated.

The test team will also record the number of ad hoc tests performed and the pass/fail results of those tests. Statistics on ad hoc testing will not be combined with those on the formal test cases.

5.2.2 CM Collected Metrics

CM metrics involve tracking the CRs/PRs. These metrics will be used by the test team as well as software development. Once the ambiguous and duplicate CRs/PRs have been resolved, maturity curves will be generated to show the number of CRs/PRs generated, corrected, and outstanding. Average age and time of resolution of CRs/PRs will also be collected.

5.3 ANALYSIS

Analysis of the tests will be done on a daily basis by the Test Director and on a release basis at the completion of ST when the overall results are reviewed. Analysis of the metrics involves looking at the trends over test sessions and releases. This analysis also involves the interpretation of the results based on experience and an understanding of how the testing process itself biases test results.

Test results will be reviewed at the daily test team meeting. The logs will be reviewed by the Test Director to determine if there are any problems that will impede testing or if there were any unusual results. Any adjustments to the test schedule or procedures will be provided to the test team. If the number of actual tests performed is falling behind the number of tests scheduled, the daily test sessions may be extended. The schedule of test cases will be reviewed to determine where parallel testing could occur with the addition of more testers and workstations.

At the completion of each test session, the metrics and results will be reviewed by the Test Director, a QA representative, and the Database Migration Project Manager. Metrics will provide relative measurements of performance. The test progress and coverage metrics determine the effectiveness of ST. The metrics on CRs/PRs provide a measure of test effectiveness and software stability.

SECTION 6 - NOTES

6.1 ACRONYMS AND ABBREVIATIONS

ACFTTB	Aircraft Code File
ACL	Available Cabin Load
AHQ	Ad Hoc Query
ALD	Available to Load Date
AMC	Air Mobility Command
API	Application Program Interface
APORTS	Aerial Ports and Air Operating Bases File
Apps	Applications
ASCII	American Standard Code for Information Interchange
ASMRO	Armed Services Medical Regulatory Office
ASSETS	Transportation Assets File
AU/X	Apple Unix
AVAIL	Available
BF	Battle Fatigue
BND	Boundary
C/S	Client/Server
C-Day	Deployment Day
C3I	Command, Control, Communications, and Intelligence
C4I	Command, Control, Communications, Computers, and Intelligence
CAST	Computer Automated Software Testing
CDRL	Contract Data Requirements List
CHSTR	Characteristics of Transportation Assets File
CIN	Cargo Increment Number
CINC	Commander-in-Chief
CM	Configuration Management
CNTRY	Country Code File
COTS	Commercial Off-the-Shelf
CR	Change Request
CRT	Create
CSCI	Computer Software Configuration Item
CUI	Character User Interface
CUT	Code and Unit Test
D&I	Develop and Integration
DART	Dynamic Analysis and Replanning Tool
DAW	Deviations and Waivers
DB	Database
DDMMYY	Day Month Year

DEIS	Defense Enterprise Integration Services
DIH	Died-in-Hospital
DIS	Display
DISA	Defense Information Systems Agency
DMDC	Defense Manpower Data Center Manpower Accessions
DoD	Department of Defense
DPS	Distributed Planning System
DTS	Deliverable Tracking System
EAD	Earliest Arrival Date
ECP	Engineering Change Proposal
ERR	Erroneous
ETC	Enhanced Terminal Capability
FAPES	Force Augmentation Planning and Execution System
FAR	Federal Acquisition Requisition
FDA	Functional Database Administrator
FM	Functional Manager
FMID	Force Module Identification
FOC	Full Operational Capacity
FQDN	Fully Qualified Domain Name
FQT	Formal Qualification Test
FRN	Force Requirement Number
FT	Far Term
FTP	
FUNCTB	UTC Functional Category Code File
GB	Gigabyte
GCCS	Global Command and Control System
GEOFILE	Geographic Location File
GFE	Government Furnished Equipment
GFI	Government Furnished Information
GKS	Graphics Kernel System
GOTS	Government Off-the-Shelf
GUI	Graphical User Interface
HHMM	Hour Minute
HP	Hewlett Packard
IAW	In Accordance With
ID	Identification
IDS/I	Integrated Data Store I
IMRAS	Individual Manpower Requirements and Available System
IMS	Information Management Subsystem
INP	Input
INSTAL	Installation Type Code File

IPR	In-Progress Review
IRM	Information Resource Manager
JDIC	JOPEs Development and Integration Contract
JES	Joint Execution Subsystem
JFAST	Joint Flow Analysis System for Transportation
JIEO	Joint Interoperability Engineering Office
JOPEs	Joint Operation Planning and Execution System
JOPS	Joint Operation Planning System
KIA	Killed-in-Action
LOGSAFE	Logistics Sustainment Analysis and Feasibility Estimator
L-Hour	Deployment Hour
LAD	Latest Arrival Date
LAN	Local Area Network
LFF	Logistics Factors File
LFFSUS	LFF Sustainment and Apportionment Code File
MB	Megabyte
MEPCOM	Military Entrance Processing Command
MEPES	Medical Planning and Execution System
MIA	Missing-in-Action
MOBCDE	Mobilization Code File
MPES	Mobilization Planning and Execution System
MPF	Medical Planning Factors
MPM	Medical Planning Module
MSC	Military Sealift Command
MTMC	Military Traffic Management Command
MTONS	Measurement Tons
MWF	Medical Working File
NBI	Non-Battle Injury
NDI	Non-Developmental Item
NOM	Nominal
NPG	Non-Unit Personnel Generator
NURC	Non-Unit Related Cargo
OBS	Observe
OFAC	OPLAN Functional Access Control
OPLAN	Operations Plan
ORG	Organization
OSD	Office of the Secretary of Defense
OTE	Operational Test Environment

PAR	Population-At-Risk
PAX	Passenger
PC	Personal Computer
PCCB	Project Configuration Control Board
PID	Plan Identification
PIF	Program Information File
PIN	Personnel Increment Number
PLG	Personnel Losses Generator
PM	Program Manager
POE	Port of Embarkation
POL	Petroleum, Oil, and Lubricants
PORTS	(Sea) Ports File
POSF	Port Of Support File
PQAO	Project Quality Assurance Official
PR	Problem Report
PUI	Project Unique Identifier
PUF	Personnel Working File
QA	Quality Assurance
QRY	Query
RCCPDS	Reserve Component Common Personnel Data System
RD	Reference Data
RDD	Required Delivery Date
RFM	Reference File Manager
RIMS	Registrant Information Management System
RLD	Ready to Load Date
RPT	Report
RSP	Response
RTS	Requirements Traceability System
S&M	Scheduling and Movement
SCN	Specification Change Notice
SDP	Software Development Plan
SEE	System Engineering Environment
SHIPTB	Ship Code File
SIPRNET	Secret Internet Protocol Router Network
SIT	System Integration Test
SMDB	(S&M) Database
SMM	Software Maintenance Manual
SORTS	Status of Resources and Training System
SPARC	Scaler Processing Architecture
SQFT	Square Feet
SQL	System Query Language
SRA	Systems Research and Applications Corporation
SRF	Standard Reference File

SRS	Software Requirements Specification
SS	System Services
ST	System Test
STD	Software Test Description
STONS	Short Tons
STP	Software Test Plan
SWIT	Software Integration Test
TBD	To Be Determined
TCC	Transportation Component Command
TCP/IP	Transmission Control Protocol/Interface Protocol
TDBM	Technical Database Manager
TDS	Transaction Distribution Services
TIM/SIZ	Timing/Sizing
TIM	Technical Interchange Meeting
TIP	Technology Insertion Project
TP	Transaction Processing
TPFDD	Time-Phased Force Deployment Data
TSC	Technical Services Center
TUCHA	Type Unit Data File
TUDET	Type Unit Equipment Detail File
UCFF	Unit Type Code (UTC) Consumption Factors File
UI	Unit Information
UIC	Unit Identification Code
ULN	Unit Line Number
UM	User Manual
UNCV	Unconventional
UPD	Update
VIP	Visual Information Projection
WIA	Wounded-in-Action
WIS	WWMCCS Information System
WWMCCS	Worldwide Military Command and Control System
WWS	WWMCCS Information System (WIS) Workstations
XTP	External Transaction Processor

APPENDIX A

PROBLEM REPORT

APPENDIX A - PROBLEM REPORT

1. PROBLEM REPORT/CHANGE REQUEST

The CR/PR form used on this project will be similar to the form used under the JOPES Develop and Integration (D&I) contract. The process and procedures for use of this form are noted below. The following information is copied from the project SDP Section 7 and supplied here for convenience. Only minor paragraph reference changes have been made and the CR/PR form has been added.

1.1 REPORTING DOCUMENTATION

GCCS personnel report problems in design, hardware, software, and documentation using the CR/PR form. No changes to controlled hardware, software or documentation will occur until the appropriate approval is obtained from the PCCB.

Changes to formally controlled items will be designated as a Class I change and will be processed via an Engineering Change Proposal (ECP). Class I is defined as any change that affects the functional, allocated, or product baseline, nontechnical contractual provisions such as cost or schedule, or other factors such as safety or Government Furnished Equipment (GFE). Class II changes are all those changes that are not Class I. Class II changes are documented as CRs/PRs and processed as described in Paragraph 1.1.1, Change Requests and Problem Reporting.

The following paragraphs describe the processes for handling hardware, software, design, and documentation problems and/or changes, and the forms used in the control of these processes. The actions required by the appropriate review boards in the implementation of these processes are described below.

1.1.1 Change Requests and Problem Reporting

Anyone can identify and document a discrepancy between baselined requirements and baselined hardware/software using CRs/PRs. The CR/PR form is used to document hardware/software problems found during the development, test, integration and fielding of the system. The CR/PR form describes the problem encountered, identifies the affected software module, and recommends a proposed solution. Figures A-1 and A-2 contain the current CR/PR form. The procedure used to process CRs/PRs is as follows:

Step 1: The completed CR/PR is forwarded to the CM Manager. Anyone may initiate a CR/PR. The initiator must, however, complete the CR/PR form by describing the problem, identifying the affected module and version, and recommending a solution if possible.

- Step 2:** The CM Manager checks to see if the CR/PR is a duplicate. If so, it is marked as a duplicate and closed. If not, the CM Manager ensures the form is complete and all statistical information is supplied. If the form is not complete, it is returned to the originator for completion. When complete, the CR/PR is logged and submitted to the PCCB.
- Step 3:** The PCCB reviews the CR/PR. If the CR/PR is Class I (will affect cost and schedule) it must be converted to an ECP and follow the ECP process. If the CR/PR is Class II (does not affect cost and schedule), the PCCB will approve or disapprove it. The PCCB determines what version the modification shall be applied to. If the PCCB disapproves, it is logged as disapproved and closed.
- Step 4:** The Software Manager assigns a developer to the CR/PR. When the problem is corrected, the updated software along with any documentation is submitted to the CM Manager to be placed back into the developmental configuration baseline.
- Step 5:** The CM Manager passes the software and documentation to the testers for regression testing. If the software does not pass testing, repeat Step 4 above. If the software passes testing, it is logged as completed and closed.

CHANGE REQUEST (CR)/PROBLEM REPORT (PR) <div style="display: flex; justify-content: space-around;"> CR <input type="checkbox"/> PR <input type="checkbox"/> </div> <div style="display: flex; justify-content: space-between; font-size: 0.8em; margin-top: 5px;"> <div> <ul style="list-style-type: none"> • To open a CR/PR, fill out Box 1 • For Analysis/Implementation, fill out Boxes 2 & 3 • For Affected Areas, fill out Box 4 </div> <div> <ul style="list-style-type: none"> • For Testing, fill out Box 5 • For CM, fill out Boxes 6&7 </div> </div>	
<div style="border: 1px solid black; padding: 2px; text-align: center; background-color: #f0f0f0;">BOX 1</div>	<div style="text-align: center; font-weight: bold; margin-bottom: 10px;">GENERAL PROBLEM DESCRIPTION INFORMATION</div> <div> <div style="display: flex; justify-content: space-between;"> <div>CR/PR #: _____</div> <div>Name: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Cross Ref: _____</div> <div>Organization: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Problem Date: _____</div> <div>Location/Phone: _____</div> </div> <div>Brief Title: _____</div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div>S/W System: _____</div> <div>Release #: _____</div> <div>H/W System: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Screen #: _____</div> <div>Recommended Priority: 1 2 3 4 5 (Circle One)</div> </div> <div>Problem Description: _____</div> </div>
<div style="border: 1px solid black; padding: 2px; text-align: center; background-color: #f0f0f0;">BOX 2</div>	<div style="text-align: center; font-weight: bold; margin-bottom: 10px;">ANALYSIS</div> <div> <div>Task Lead: _____</div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div>Estimated hours to complete: _____</div> <div>Analysis Date: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Recommended Release: _____</div> <div>Error Source: _____</div> </div> <div>Analysis Description: _____</div> </div>
<div style="border: 1px solid black; padding: 2px; text-align: center; background-color: #f0f0f0;">BOX 3</div>	<div style="text-align: center; font-weight: bold; margin-bottom: 10px;">IMPLEMENTATION</div> <div> <div style="display: flex; justify-content: space-between;"> <div>Programmer: _____</div> <div>Implementation Date: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Actual Hours to Complete: _____</div> <div>Scheduled Release: _____</div> </div> <div>Scheduled Release Date: _____</div> <div>Implementation Description: _____</div> </div>

Revised 3/1/95

Figure A-1: Page 1 of the CR/PR Form.

BOX 4	<h3 style="text-align: center;">AFFECTED AREAS</h3> <p>System: _____ Subsystem/Functional Area: _____</p> <p>Subdirectory: _____</p> <p>CSI/Unit Name: _____ Copylibs: _____</p> <p>Screens: _____ Documentation: _____</p> <p>Reports: _____</p>
BOX 5	<h3 style="text-align: center;">TESTING</h3> <p>Tester Name: _____ Test Date: _____</p> <p>Test Results: Pass <input type="checkbox"/> Fail <input type="checkbox"/> Partial <input type="checkbox"/> Initial: _____ Date: _____</p> <p>Test Description: _____</p> <p>Test Comments: _____</p>
BOX 6	<h3 style="text-align: center;">PCCB ACTIONS</h3> <p>PCCB Date: _____ PCCB Priority: 1 2 3 4 5 Class: I <input type="checkbox"/> II <input type="checkbox"/></p> <p>Last Date Updated: _____ Life Cycle Phase: _____</p> <p>Analysis: Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Date: _____</p> <p>Implementation: Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Date: _____</p> <p>Actual S/W Turnover Date: _____ Software Turnover Form #: _____</p> <p>Analysis/Implementation Signature: _____ Date: _____</p> <p>PCCB Actions Taken: _____</p>
BOX 7	<h3 style="text-align: center;">PCCB CLOSURE ACTIONS</h3> <p>Closure: Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Date: _____</p> <p>Closure Status: _____</p> <p>Approval Official: _____ Signature: _____</p> <p>Closure Comments: _____</p>

Figure A-2: Page 2 of the CR/PR Form.

1.1.2 ECP

The ECP form is used to propose Class I changes to the Government. Anyone can identify a need for an ECP by submitting a CR/PR. ECPs are prepared in accordance with MIL-STD-973, Paragraph 5.4. As a normal review function, the project PCCB determines if the CR/PR affects a controlled baseline. If it does, it must be processed as an ECP. The procedure for processing an ECP is as follows.

- Step 1:** The PCCB determines if and when a CR/PR should be converted to an ECP.
- Step 2:** The ECP is submitted to the Government for approval.
- Step 3:** If the ECP is approved, the Software Manager assigns a developer to the ECP. When the work is completed the software, along with any documentation, is submitted to the CM Manager to be placed in the developmental configuration baseline. If the ECP is not approved, it is logged as disapproved and closed.
- Step 4:** The CM Manager passes the software and documentation to the GCCS testers for testing. If it does not pass testing, repeat Step 3. Otherwise, the CM Manager logs it as completed and closed.

1.1.3 Specification Change Notices (SCN)

The SCN is used to propose, transmit, and record changes to a specification, i.e., the allocated baseline. SCNs are prepared in accordance with MIL-STD-973, Paragraph 5.4. ECPs which affect a specification must have an SCN form attached. Class I changes implemented into a baselined specification are documented by SCNs and delivered with updated specifications (accompanied by the related ECP).

1.1.4 Deviations And Waivers (DAW)

A request for deviation or waiver is used by the contractor to request and document various departures from baseline requirements of the configuration item. A deviation is a written authorization granted before product development to permit the contractor to depart from a particular performance, design requirement, or period of time. A waiver is a written authorization to deliver a configuration item that has been found to depart from specified requirements after development, but is considered suitable for use or rework. The procedure used in processing DAWs is as follows.

- Step 1:** A DAW is submitted to the Program Manager (PM) and CM by the GCCS Software Engineer. CM ensures that the DAW is prepared in accordance with MIL-STD-973, Paragraph 5.4. If not, it is returned to the author for correction.
- Step 2:** The PM submits the DAW to the PCCB for approval.

Step 3: The PCCB reviews the DAW. If approved, the CM Manager logs it as approved and closed. If it is not approved, the GCCS Software Engineer must ensure it meets the requirements before delivery. It is logged as disapproved and closed.

1.2 REVIEW PROCEDURES

1.2.1 PCCB Procedures

This section discusses the procedures for reviewing and approving or disapproving PRs and CRs through the PCCB.

The GCCS Database Migration PCCB is responsible for the review and approval of any changes to internally and contractually baselined products, including documentation, hardware, COTS/Non-Developmental Item (NDI), and software.

The PCCB is chaired by the GCCS PM and co-chaired by the Government action officer or his designated representatives. Membership includes representatives from the following areas: Software Development, Test, CM, QA, and Systems Engineering. The CM Manager supports the PCCB as the Board Secretariat, and is responsible for issuing board agendas, recording and issuing board minutes, action items, and maintaining the status of all CR/PRs, SCNs, ECPs, and DAWs.

The PCCB's responsibilities include:

- Reviewing all CRs/PRs
- Controlling all documentation placed under configuration control
- Evaluating and resolving all design problems affecting requirements
- Evaluating all proposed changes that affect project cost and schedule
- Designating Class I proposed changes (ECPs)
- Approving all specifications, project plans and other control board managed documents for release to the Government
- Ensuring that the initial configuration of baselined software and all changes meet the requirements of the contract
- Ensuring that the software has been properly documented, internally tested, and is ready for test
- Ensuring that all problems have been resolved and all requirements are met

- Controlling the release of the baselined software and documentation to the Government
- Rank ordering the CR/PRs for implementation, using the assigned priority.

1.2.2 PCCB Meeting Procedures

The following is the procedure for convening, controlling, and reporting PCCB meetings.

- Step 1:** A PCCB agenda will be prepared when the CM Manager receives a CR/PR, ECP, or DAW. The agenda will consist of a cover letter outlining the issues, the time, and location of the meeting, and copies of the CRs/PRs or ECPs that will be presented at the meeting. CM will mail this agenda to the PCCB members at least 48 hours in advance of the meeting.
- Step 2:** The PCCB's primary function will be to approve or disapprove CRs/PRs and ECPs. In addition, each CR/PR will be reviewed and assigned a priority in accordance with the definitions shown in Table A-1.
- Step 3:** After all CRs/PRs and ECPs have been processed the floor will be open to any new business requiring notification of the PCCB.
- Step 4:** CM will publish minutes of the PCCB meeting within 48 hours, listing the CRs/PRs and ECPs discussed and the decisions made by the PCCB.

Table A-1: CR/PR Priority Scheme.

PRIORITY	PRIORITY DEFINITION Applies if a problem could:
1	<ul style="list-style-type: none"> Prevent the accomplishment of an operational or mission essential capability. Jeopardize safety, security, or other requirement designated "critical".
2	<ul style="list-style-type: none"> Adversely affect the accomplishment of an operational or mission essential capability but no work-around solution is known. Adversely affect technical, cost, or schedule risks to the project or to life cycle support of the system, but no work-around solution is known.
3	<ul style="list-style-type: none"> Adversely affect the accomplishment of an operational or mission essential capability but a work-around solution is known. Adversely affect technical, cost, or schedule risks to the project or to life cycle support of the system, but a work-around solution is known.
4	<ul style="list-style-type: none"> Result in user/operator inconvenience or annoyance but does not affect a required operational or mission essential capability. Result in inconvenience or annoyance for development or support personnel, but does not prevent the accomplishment of those responsibilities.
5	<ul style="list-style-type: none"> Any other effect.

APPENDIX B

S&M APPS TESTS

APPENDIX C

AHQ TESTS

APPENDIX D

SYSTEM MANAGEMENT TESTS

APPENDIX E

TRANSACTION TESTS

APPENDIX F

TRANSACTION DISTRIBUTION SYSTEM TESTS

APPENDIX G

IRM TESTS

APPENDIX H

IMS/RFM TESTS

APPENDIX I

MEPES TESTS

APPENDIX J

NPG TESTS

APPENDIX K

GCCS REQUIREMENTS TRACEABILITY SYSTEM (RTS)